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ABSTRACT

This New York City curriculum guide demonstrates the many ways in which art departments can use microcomputers to assist in teaching students to design different images, for different audiences and different purposes, utilizing the special ways in which computers can enhance the creative process. The book covers 168 topics, divided into 13 sections: (1) design, (2) drawing, (3) texture, (4) color, (5) graphic design, (6) art programs in BASIC, (7) cartooning, (8) photography, video, and movie making, (9) architecture, (10) stage craft, (11) fashion design, (12) crafts, and (13) print making. An appendix includes a glossary of computer terms, information about copying diskettes, ways to get technical assistance, and a list of software used in the text. (Author/AS)

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# Foreword

The use of computers in classrooms to support and extend instruction is a topic which is being discussed in major educational forums across the country. Until a few years ago, computer use in schools was the exclusive domain of mathematics departments. Now however, other content area departments have found ways to use computers to enhance the teaching of their subjects.

This guide demonstrates the many ways in which art departments can use microcomputers to assist teachers in teaching students to design different images, for different audiences and different purposes, utilizing the special ways in which computers can enhance the creative process. We are confident that this new technology will extend student learning in ways not possible before.

We hope that the suggestions and materials included in this guide will demonstrate and support the range of uses of the computer in art classes.

Charlotte Frank

Charlotte Frank, Executive Director
Division of Curriculum and Instruction

The use of computers in the classroom has become more prevalent during the past few years. Through this use we have developed a knowledge of their functions and a better vision of their potential. We encourage our colleagues to freely experiment and attempt new approaches. Only with all of us working in concert, can we fulfill our vision for an effective integration of school technology into all subject areas. From these beginnings, we will nurture the critical thinking and practical skills our students will need to succeed in the information age. If children are not comfortable with computers, they will be as unprepared for the future as an adult who cannot read or write.

The purpose of this guide is to give teachers and supervisors a working knowledge of various approaches to enhance pupil learning. Our guides are intended to be open ended and flexible in nature. As a 1920s car is not efficient by 1980 standards, outmoded computer education ideas of the seventies have been replaced by the new visions of the eighties. Classroom use of technology has doubled and redoubled in the past few years. Teachers are continually devising new ideas for the use of this technology.

Feel free to write to me directly with your comments and suggestions concerning this curriculum guide, so that we may improve and update it to meet your needs.

Irwin Kaufman

Irwin Kaufman, Director
Office of Technology

## *Acknowledgments*

COMPUTERS IN THE ART CLASSROOM is a joint project of the Office of Technology, Irwin Kaufman, Director and the Division of Curriculum and Instruction, Charlotte Frank, Executive Director.

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## *Preface: Why Computers?*

"Be not the first by whom the new are tried,
Nor yet the last to lay the old aside."

Nothing could give us better advice concerning the integration of computers into traditional teaching methods than Pope's couplet from "An Essay on Criticism." In embracing the computer, we certainly run the risk of being "the first," of rushing to rely too much on a machine's ability to teach and review. And yet, given the power of the personal computer to educate, we run an equal risk of being "the last," of resisting too much and relying too little on its abilities as a teaching aid and, therefore, losing, and causing our students to lose, the help computers can give classroom instruction.

What are the computer's strengths? Even a short list must include these points:

1. Classroom computers allow students to work individually, and yet together, on synchronized exercises.
2. Computers require each student to focus attention narrowly; for many students they insure a closer understanding of the day's work.
3. Computers allow a greater immediacy of individual student response for a greater number of students.
4. Computers give students immediate feedback during the exercise phase of a lesson.
5. Computers afford students the opportunity to work at their own pace, rather than at the pace of an imaginary class median.
6. Computers give each student a more thorough contact with the subject matter as an individual or as part of a small group.
7. Computers afford absentees a far greater opportunity to catch up on missed work without disrupting the flow of classroom instruction.
8. Computers allow teachers to make more efficient use of their classroom time as compared with more traditional question and answer lessons.
9. Computers encourage student response in a nonjudgmental way, thus making the sometimes groping experience of learning less intimidating for students who are not always comfortable in a classroom setting. Computers never get tired of or exasperated with a demand for countless repetitions of the same instruction.
10. Finally, and, perhaps, most important, the computer has an intrinsic motivational quality that increases student interest, concentration, and retention; we cannot ignore the appeal working with computers has for today's students.

Every experienced teacher will recognize that, except for point 10, none of these points is new; in fact, they have been part of good teaching since time immemorial. And that recognition indicates an important point about the computer and the classroom. The use of the computer is not, strictly speaking, something revolutionary in education, but something evolutionary instead. It enhances, rather than replaces, those methods of teaching that have traditionally been recognized as the most effective. Its instructional function is not something entirely new, and, consequently, something to be looked upon with suspicion, but something old done in a new and, often, more effective way.

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## Introduction

The cost of microcomputers prohibits arguing reasonably for their use simply as drawing tools. In addition, "Paint box" computer manipulations that fail to involve interactive strategies for teaching art concepts can only be characterized as low level "computer literacy". Certainly it is not significant art learning or sophisticated graphic design. Thus, until we can offer professionally oriented art experiences and interactive learning packages in the arts that go beyond simple-minded drawing on computer screens or the BASIC programming of "sprites" that move squares and rectangles around the screen, we have no legitimate argument for puchasing microcomputers for the art classroom.

Upon what then might we base a legitimate claim to microcomputers in the art classroom? We might claim that computers harbor the potential to instruct students in the basic concepts of art in ways that are impossible through traditional methods. For example, the utility of the microcomputer for teaching art concepts such as value, texture, color, balance, rhythm, etc., is largely unexplored. It takes little imagination, however, to see that the speed of the microcomputer, its ability to manipulate colors, values. etc., and its capacity to store multiple variations on a visual theme, and its other power attributes, renders it potentially powerful as a teaching tool for the arts. We might gain some support for our microcomputer requests if we were to demonstrate how microcomputers may be used to provide interactive learning packages, computer assisted instruction (CAI), in the arts that help learners become better designers and artists.

Obviously, to do this, we must take advantage of the microcomputer's ability to draw images, move images, manipulate colors, digitize video images, etc. We can use the microcomputer's ability to draw and manipulate images, but we must demonstrate its usefulness as a pedagogical replacement tool for traditional drawing media.

Of course, we have yet to prove that microcomputers could be used as effective learning tools in the arts. And until we develop some sophistication in our research with microcomputers that demonstrates their appropriateness as interactive tools for teaching art concepts, our arguments on behalf of acquiring microcomputers for art classrooms do not warrant their purchase.

At present, we should be working hard to demonstrate that microcomputers and graphics can be united to form a valuable teaching and learning environment. Arguing for anything less is simply asking to trade a pencil for a microcomputer with which to draw.

## *Classroom Management Procedures*

Thirty-six students working independently at 16 or more computer stations can easily lead to an almost chaotic confusion during the computer lab period, particularly if finding and distributing each student's working diskette takes too much time at the start. In addition, your ability to retrieve the performance information the program may record for each student depends upon carefully organizing the distribution and collection of the diskettes from the start. For these reasons, and a host of others, it is a good idea to think of classroom management procedures long before the computer lab period actually takes place, and to structure both the computer period and the computer room in ways that will make the computer period run smoothly and effectively.

In an ideal world each of your students would be able to work independently at a computer workstation, and that situation may exist in some classrooms at some times during the year. But most classes consist of 30 or more students and most computer labs of 16 or fewer workstations; the large number of workstations and the larger number of students requires careful record keeping and classroom management. Students must work in a highly structured environment in the lab or they will accomplish much less than you expect them to.

The following outline of suggested procedures will help you create a structured computer lab. After a few periods in the lab, you'll be able to refine the procedures to better suit your own needs.

I. Before the computer lab period.

1. If you are not familiar with the computers in your school, or not entirely comfortable with them, try to spend some time working with them on your own before you guide your students in using them.

   Your uncertainty or uneasiness about computers may leave you at a loss at some point in your lesson or be transmitted to those of your students who also feel intimidated by the machine. In either case it will have a negative effect on your lesson.

2. Preview the software you intend to use thoroughly. Learn what it does and how it works. Find out what background information your students will need to run the program -- for example, what vocabulary they will have to know. Once 16 groups of students start working and, presumably, asking questions, it will be impossible to decipher anything about the program that you, and they, may find confusing.

3. Number each workstation in the computer lab clearly, so that you and the students can see the numbers easily.

   If it isn't possible to copy one student data diskette for each member of the class, you can use one diskette at each workstation. However, the advantages of individual student data diskettes outweigh the disadvantages, and by a wide margin. Blank diskettes are relatively inexpensive, particularly when they are ordered in large quantities, and you will be able to use them year after year, virtually forever, simply be recopying the original data diskette over them whenever a class completes the program. In addition, providing each student with a diskette will prevent certain student generated errors from occurring and make classroom management and student evaluation much easier for you. Refer to the Appendix section of this book entitled "Copying Public Domain Diskettes" for copying instructions and for information about obtaining diskettes through a New York State Supply contract.

4. Label each diskette to coincide with one of the workstations -- i.e., diskette number 14 must always be used at workstation 14. (Of course, any diskette will work at any station, but for classroom management purposes follow this rule.)

5. Divide your class into workstation groups of two, three, or four students, as needed. Look over the student combinations carefully before making final assignments. If you don't feel that a particular combination of students will work well together for an extended period of time, don't allow them to form a group. Once a group has been established, it will be necessary for those students to work together through each of the modules in the program on subsequent days, a procedure that can last for weeks.

6. Assign each group a work station number and keep a close record of the names of the group members and their group number. Each group should work at the same workstation through the entire program, and with the same student data diskettes. Each student operating diskette will eventually hold all of the records of only those students who use that diskette. If a student uses a different diskette each work period, the records will be scattered among them all, and it will be difficult to retrieve them; for 30 or more students it would be too time consuming to be feasible.

7. As an extra precaution, label each diskette with the names of the students who will use it.

II. During the computer lab period.

1. At the beginning of the period have the students sit at their assigned workstations, with no exceptions. Then distribute the diskettes according to their corresponding numbers; the student names on the data diskettes should also correspond to the students who are at each workstation.

2. At the end of the period collect the diskettes and store them in numerical order to make their distribution at the next period easier.

3. Once you have established workstation groups, assignments, and procedures, resist any temptation to make changes unless the changes will clearly be to your advantage. As in any classroom, the closer you follow established procedures, the more control you will maintain over the period and the more effective the use of the software will be.

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# DESIGN

## *TOPIC 1: Exploring Shapes and Forms, Creating and Designing Them With the Computer*

Performance Objectives: Students will be able to:

- create computer generated two-dimensional shapes by drawing and closing lines
- create the illusion of three-dimensional form by adding depth to some of the shapes
- create a design in which there will be a controlled transition from two-dimensional rendering of form.
- to add through the use of values and contrast, tones which will help to describe the illusionistic transition from two-dimensional to three-dimensional rendering.
- save the computer drawing on a floppy diskette.
- print out a hard copy of the computer generated graphic.

Aim:

The student will create a basic design using the elements of shape, form, and value in which there is a controlled transition from flat two-dimensional rendering to illusionistic three-dimensional rendering.

Materials:

- IBM pc
- disk drive and floppy diskette
- video monitor
- printer
- device for controlling the use of the selected software (keyboard, mouse, digitizing tablet or Koala pad, light pen)

* The digitizing tablet, or Koala pad is preferable because it tends to draw the technical aspects of computer generated art closer to the approach of the traditional artist. One can draw with the tablet, and allow it to transfer all of the correct data to the central processing unit, which will allow the artist to use the computer simply as an extension of media and tool for organization and creativity.

- adequate graphics software such as Delta Draw, P.C. Paintbrush, Autocad, etc.

Motivation:

1. Show developmental sequences from which Mondrian was able to abstract from nature simple two dimensional planes which were designed as paintings.

2. Show the transitional prints of M.C. Escher where he not only dealt with flat to three-dimensional rendering, but also from positive to negative spacial rendering.

3. How did Escher do drawing of hands drawing each other.

Development:

1. What is the basic difference between designing with two-dimensional shapes and illusionistic three-dimensional forms?

2. How have some artist dealt with these differences?

3. How would you attempt to continue these two types of rendering?

4. Is there any particular subject matter which you can think of that would lend itself to this projected problem?

5. Procedure:
   1. Discuss the definition of shape.
   2. Discuss the definition of form.
   3. Discuss transitions between shape and form.
   4. Direct a class critique of motivational material. How have other artists dealt with this idea?
   5. Select a subject and begin idea thumbnail sketches.
   6. Demonstration:
      1. Boot up selected software.
      2. Demonstrate the procedure to access commands from the software menu.
      3. Demonstrate the use of Koala pad, mouse or keyboard controls.
      4. Demonstrate save and retrieve functions.
      5. Demonstrate printing procedures when necessary.
   7. The student will boot up the selected software.
   8. The student will begin to create computer generated shapes and forms, following the thumbnail sketch.
   9. The student will save on diskette the drawing in progress.
   10. The student will retrieve and edit the drawing in progress as many times as necessary until completion.
   11. The student will add values and contrast to the shapes and forms to help describe them as areas in space.
   12. The student will print out a hard copy of the final solution to the projected design problem.

6. The projected time for creating, editing and printing the final version of this design problem will be approximately four to five class periods.

Summary:

The student will use computer generated graphics to enhance the concepts of basic design using shapes and forms which is discussed on page 6 of the "Introductory Art in the High Schools" curriculum guide of the Board of Education of the City of New York. The student will create a basic design using the elements of shape, form, and value. The design will exhibit a transformation from shape to form.

Assignment:

1. Create an original design in thumbnail sketch form which will attempt to solve the projected design problem and bring it to class.

2. Describe to the best of your ability how some of the artists which you have seen solved a similar design problem.

3. Draw into the printout of your design in progress, so that you may make artistic decisions for design completion at home. Your class time will be used much more economically this way.

## *TOPIC 2: Designing Total Space*

Performance Objectives: Students will be able to:

- design the total space of a two-dimensional picture plane using the elements of design (line, shape, color, texture, and space)
- design the picture plane in such a way that there is an equal balance between the figure (positive space) and the ground (negative space)
- use the principles of design (balance, rhythm, variation, contrast, repetition, and harmony) to create a computer graphic design composition which may or may not be symmetrical in nature

Aim: The student will create a computer graphic design in which both the figure and the ground are equally important as shapes which interact and compose the total space utilized.

Materials:

- IBM PC
- proper software (Delta Draw, P.C. Paintbrush, Autocad, etc.)
- device for controlling the use of the selected software package (keyboard, mouse, digitizing tablet, light pen)
- video monitor
- printer

Motiviation:

1. Show prints and drawings of M.C. Escher

2. Show paintings of Frank Stella

Development:

1. What are the unique qualities of the prints of M.C. Escher which you have just seen?

2. Is the figure more important as a shape than the ground?

3. How has he been successful in designing the "total space?"

4. What ideas can you abstract from his work and utilize to create your own design?

5. What similarities can you see between Escher prints and Stella paintings?

6. How can you abstract from his work and utilize to create your design?
    a) use equal amount of figure and ground
    b) squeeze the ground against the edge of the picture
    c) place the figure so that the viewer's eye can't travel undisturbed from one side of the picture plane to the other

7. What benefits will you achieve through the use of computer graphics?
   a) clear crisp accurate rendering
   b) ease of change of color, texture, value, etc.
   c) different versions based upon a design theme

8. Procedure:
   a) Boot up your IBM pc with selected software.
   b) Follow menu directions for lines, shapes, color texture, etc.
   c) Begin computer design.
   d) Save design on floppy disk for future use.
   e) Retrieve original design for editing, alteration or printing hard copy.
   f) Print hard copy of design at the end of each session.
   g) Draw into hard copy for changes or additions to be made.
   h) Continue computer graphic design to completion.
   i) Print final hard copy.

9. Demonstration:
   a) Teacher boots up selected software.
   b) Demonstrate the use of the menu with the proper device or tools to get the particular software command wanted.
   c) Demonstrate line drawing.
   d) Demonstrate shape fill, color change, texture changes, etc.
   e) Demonstrate save and retrieve functions.
   f) Demonstrate printing hard copy.

Summary:

The students will use computer graphics to enhance basic design concepts found on page 6 of the "Introductory Art in the High School" curriculum guide of the Board of Education of the City of New York. The student will use both the elements of design as well as the principles of design to create a computer graphics image in which the "figure" and the "ground" are equal in power and compositional effect.

Assignment:

1. Sketch shapes within a picture plane so that they form areas of "ground" which will become powerful shapes in their own right.

2. Print hard copy. Sketch in additions or editing.

## *TOPIC 3: Composing Space, Stressing the Conceptual Tool of Similarity*

Performance Objectives: Students will be able to:

- create a computerized composition of forms within an interior
- use and balance similar elements throughout the picture plane.

Aim: The student will create an interior composition in which he will utilize similarities of line, shape, form, texture, value, color, contrast, and intensity.

Materials:

- IBM PC
- disk drive and floppy diskette
- video monitor
- printer
- device for controlling, accessing and drawing, using the selected software. (keyboard, digitizing tablet or Koala pad, mouse, light pen)
- software such as Delta Draw, P.C. Paintbrush, etc.
- drawing or photograph of an interior including multiple forms.

Motivation:

1. Show selected reproductions of artist masters down through history who utilized the concept of similarity within their compositions. (e.g. Cezanne, Van Gogh, Picasso, Vermeer, Rembrandt, etc.

2. The concept will be shown to be used by many people, of many geographic locations and of different time periods. The student should be made to feel that there are too many variables to be coincidental.

Development:

1. How has similarity been utilized within the reproductions which you have just seen?

2. How does similarity affect the space between the forms within the interior?

3. How would you use similarities within your composition?

4. Procedure:
    a) Select a reproduction, photograph or drawing of an interior of many forms.
    b) Redesign a preliminary sketch, stressing all the similarities which may be seen to be present.
    c) Demonstration:
        1. Boot up software.
        2. Demonstrate Koala pad.
        3. Demonstrate save and retrieve functions.
    d) Student boot up software.
    e) Student begin to transfer drawing with Koala pad.

    f) Finalize the composition stressing the similarities within.
    g) Save the final solution on disk.
    h) Print out hard copy of the similarity concept composition problem.
    i) Save hard copy for group display of the composition problems of lessons number 3, 4, 5, and 6.

5. The projected time for the completion of the similarity composition problem will be approximately three to four class periods.

Summary:

The student will use computer generated graphics to enhance the concept of basic design and composition which is discussed in pages 6 and 7 of the "Introductory Art in the High School" curriculum guide of the Board of Education of the City of New York. The student will redesign an interior space, composing the forms by stressing the similarities of line, shape, form, texture, value, color, contrast and intensity.

Assignment:

1. Select a reproduction, photograph, or set up and draw an interior which will be used to express the composition concept of similarity.

2. Redesign the original interior by stressing its similarities. The student may use tracing paper for minor shifts of forms.

## *TOPIC 4: Composing Space, Stressing the Conceptual Tool of Continuity*

Performance Objectives: Students will be able to:

- learn and demonstrate the concept of continuity
- use continuity within a computer graphics composition
- line up objects and forms upon invisible sight lines within the picture plane

Aim: The student will create a second composition which will use the original interior sketch from the last lesson as the basis of composing the space, this time by stressing the conceptual tool of continuity.

Materials:

- IBM PC
- disk drive and floppy diskette
- video monitor
- printer
- device for controlling the use of selected software (keyboard, mouse, digitizing tablet or Koala pad, light pen
- software such as Delta Draw, P.C. Paintbrush
- interior sketch from the last lesson
- drawing pad and sketching materials

Motivation:

1. Show the same reproduction selections from lesson 3.

2. Point out the concept of continuity which is utilized throughout the compositions of those paintings or prints which have been selected

3. The addition of a second concept which is utilized by all the artists who were selected as motivational material will make it apparent that such a concept is simply too consistent to be coincidental.

Development:

1. How have the artists who created the above compositions used the concept of continuity to help direct the viewer's eye throughout the selected piece?

2. Why is this artistic control important?

3. How consistent are these sight lines?

4. What direction do these sight lines travel? (answer the above questions on the basis of viewing a particular reproduction by a specific artist.)

5. Procedure:
    a) The student will take the original interior sketch from lesson 8.
    b) The student will create "sight lines" for a second interior composition.

c) The student will use tracing paper to realign the forms within the composition so that they will line up upon the sight lines which the student has created.

d) Demonstration:
   1. Create sight lines
   2. Align forms upon the sight lines created
   3. Demonstrate boot up procedures
   4. Demonstrate menu command access
   5. Demonstrate use of Koala pad
   6. The student will begin to draw, with the computer, the second composition of the interior which will stress the continuity developed earlier
   7. The student will save the current computer drawing for future use.
   8. The student will retrieve and print out hard copy of the current computer drawing
   9. The student will draw into the printout any additions or alterations
   10. The student will continue the computer composition to completion
   11. The student will print out hard copy of the final solution to the continuity composition problem
   12. The student will save the printout of the solution to lesson 4 which will be displayed later with the solutions to lessons 3, 4, 5 and 6.

6. The projected time for the completion of the continuity composition problem will be approximatley three to four class periods.

Summary:

The student will use computer generated graphics to enhance the concept of basic design and composition which is discussed on pages 6 and 7 of the "Introductory Art in the High School" curriculum guide of the Board of Education of the City of New York. The student will redesign an interior space, composing the forms by stressing continuity and invisible sight lines. This composition may follow a symmetrical, asymmetrical, or radical type of balance.

Assignment:

1. Take the original sketch from lesson 3 and redesign it by making slight shifts of form so that they will align themselves upon sight lines that will create a feeling of continuity. The design may create symmetrical, asymmetrical, or radical balance of "eyeflow" throughout the picture plane.

2. Select examples of photographs and/or illustrations from magazines or newspapers which exhibit and undoubtedly utilize the concept of continuity, and bring them to class.

3. With a piece of tracing paper, find, draw, and analyze the continuity sight lines which are utilized.

## TOPIC 5: Composing Space, Stressing the Conceptual Tool of Proximity

Performance Objectives: Students will be able to:

- learn and be able to demonstrate the concept of proximity
- use proximity within a computer graphics composition
- create groups of objects or forms which will react towards other groups of objects (groups within groups with groups)

Aim: The student will create a third composition which will use the original interior sketch from lesson 3, this time by stressing the conceptual tool of proximity. The composition may follow a symmetrical, asymmetrical, or radical style of balance and rhythm.

Materials:

- IBM PC
- disk drive and floppy diskette
- video monitor
- printer
- device for controlling the use of selected software (keyboard, mouse, digitizing tablet or Koala pad, light pen)
- software such as Delta Draw, P.C. Paintbrush
- interior sketch from lesson 3
- drawing pad and sketching materials

Motivation:

1. Show the reproduction selections from the artists used to motivate for lesson 3.

2. Point out the concept of proximity which is utilized throughout the compositions of those paintings or prints which have been selected.

3. The addition of a third concept of composition which is utilized by all the artists who were selected as motivational material will most definitely make it evident to the students that this is another concept that is also too consistent to be coincidental.

Develpment:

1. How is the concept of proximity used to help guide the viewer's eye throughout the picture plane?

2. Can this concept help you to control the way in which someone will view your work?

3. How have the artists whose works you have seen utilized proximity?

4. Procedure:
   a) The student will take the original interior sketch from lesson 3.
   b) The student will create groups which will interreact with other groups of forms within the picture plane.

c) The student will use tracing paper to realign the forms within the picture plane so that these groupings of forms will be created.
d) Demonstration:
    1. Create groups of forms.
    2. Position those groups of forms.
    3. Demonstrate menu command access procedure.
    4. Demonstrate Koala pad.
    5. Demonstrate save and retrieve functions.
e) The student will boot up the selected software.
f) The student will begin to draw with the computer a third interior composition which will stress the concept of proximity.
g) The student will use the redesigned sketch in conjunction with a Koala pad.
h) The current working computer drawing will be saved on disk for future use.
i) The current working computer drawing will be printed out at the end of the working period.
j) The student will draw into the current drawing to continue to work on it.
k) The student will retrieve the current drawing to continue to work on it.
l) Continue this procedure until the drawing is complete.
m) Print out hard copy of the final version of the solution to the projected composition problem.
n) Save the printout for a presentation with the solutions of problems of lessons number 3, 4, 5 and 6.

5. The projected time for the completion of the proximity composition problem will be approximately three to four periods.

Summary:

The student will use computer generated graphics to enhance the concept of basic design and composition which is discussed on pages 6 and 7 of the "Introductory Art in the High School" curriculum guide of the Board of Education of the City of New York. The student will redesign an interior space, composing the forms by stressing proximity. This composition may follow a symmetrical, asymmetrical, or radical type of balance.

Assignment:

1. Take the original sketch from lesson 3 and redesign it by shifting the forms within so that they create groups which will react with other groups.

2. Select examples of photographs and/or illustration from a magazine or newspaper which will exhibit the concept of proximity.

3. When these examples are located, trace out the areas where proximity exists and see if they could be shifted to improve its strength.

4. Draw into the current computer hard copy so that you may help to determine any design adjustments which should be made to increase the possibility of success of the design or composition solution to the projected problem.

# *TOPIC 6: Composing Space, Stressing a Rotating Diagonal Shift of the Picture Plane*

Performance Objectives: Students will be able to:

- create a fourth composition of an interior space
- use the strengths of the previously studied concepts of similarity, continuity, and proximity
- organize elements of the three concepts so that they will create a rotating diagonal shift of the picture plane
- print out a hard copy of the final solution to the projected problem of lesson 6
- make a display presentation of all four composition problems which will be viewed as a unit

Aim:

1. The student will create a fourth composition in which a new concept (a rotating diagonal shift of the picture plane) is used to organize and compose forms within an interior space. Selected strengths of the three concepts of similarity, continuity, and proximity studied previously in lessons 8, 9, and 10 will be utilized within this rotating diagonal shift and placement of forms within the picture plane. If these concepts are used, good composition must be achieved, and the viewer's eye will be controlled by the artist's predetermined methods of how his work will be seen.

2. The student will gain an understanding that he/she as the artist, can control all that he/she creates, from the first line drawn throught the final stages of presentation and viewing.

Materials:

- IBM pc
- disk drive and floppy diskette
- video monitor
- printer
- device for controlling the selected software (keyboard, mouse, digitizing tablet or Koala pad, light pen)
- software such as Delta Draw, P.C. Paintbrush, Autocad
- original sketch from lesson 3
- hard copy of the solution to solutions to lessons 3, 4, and 5
- sketch pad and drawing materials

Motivation:

1. Show selected reproductions of paintings by Giotto.

2. Show selected reproductions of paintings by Chardin.

3. Take a photograph, illustration or hard copy graphcs interior from one of the students:
    a) cut it on the vertical axis

b) shift the two sides of the drawing vertically and tape it
c) cut it again on the horizontal axis
d) shift the two sides on its horizontal axis and tape it
e) the result will give the viewer a rotating diagonal shift of the picture plane which will most definitely control the way in which the artwork is viewed.

Development:

1. Do the artists whose work you have seen control the way in which you view their work? If so, by what means do they do so?

2. What have you observed from the motivational exercise which I have just completed?

3. How can you use these observations to your advantage?

4. Procedure:
    a) Take your original interior sketch from lesson 3 or one of the hard copy graphic interior computer drawings, and follow the motivational exercise outlined in line three of the motivation section.
    b) Use this completed exercise to help you make determination on how to shift the elements or forms within your interior space so that it will create a rotational diagonal shift of the picture plane.

    c) Use tracing paper to selectively move and shift the forms so that they describe the compositional concept within this lesson. Select and use the strongest elements of similarity, continuity, and proximity when you are shifting the forms throughout the picture plans.
    d) Demonstration:
        1. Motivational exercise in item three of the motivation section.
        2. Software boot-up.
        3. Menu command access procedure.
        4. Use of Koala pad.
        5. Student will boot up software.
        6. The student will use the prepared tracing layout sketches with the Koala pad to transfer the fourth composition project to computer language for storage.
        7. Print out a hard copy of the current composition project daily.
        8. Save the current computer drawing on disk for future use.
        9. Draw into the hard copy for future alterations and/or additions to the composition.
        10. Edit the computer composition.
        11. Save the final version.
        12. Print out hard copy of the final solution to the fourth composition problem.
        13. Create a display presentation of all four composition problems whereby all hard copy printouts will be exhibited together with a brief explanation of the compositional concepts involved.

5. The projected time for the completion of this composition project and presentation will be approximately five class periods.

## Summary:

The student will use computer generated graphics to enhance the concept of basic design and composition which is discussed on pages 6 and 7 of the "Introductory Art in the High School" Curriculum guide of the Board of Education of the City of New York. The student will redesign an interior space using the concepts of similarity, continuity, and proximity, while placing the elements and forms used within a rotating diagonal shift of the picture plane.

## Assignment:

1. Take the original sketch or one of the printouts of a computer graphic composition and follow the procedural steps outlined in item three of the motivation section.

2. Take this completed exercise and shift the forms upon a tracing overlay so that they will more readily conform to the movements and visual flow embodied by the exercise.

3. Draw into the hard copy of the current version of the solution to the projected problem within this lesson, for any alteration or additions to the composition which you are planning.

## TOPIC 7: Creating a Computer-Generated Working Pattern for a Stained Glass Design

Performance Objectives: Students will be able to:

- demonstrate an understanding of shapes and how they will be cut as glass pieces
- demonstrate an understanding of a working pattern
- use a wide black line (1/4") to separate the larger more colorful shapes, as would lead come or soldered copper foil
- select color to fill the shapes designed with, keeping in mind the glass which will be utilized in the final stages of work
- choose the types of shapes based upon possible cuts of the glass (inside curves are very difficult to cut)
- set up a configuration of shapes based upon how the stained glass will be assembled.

Aim: The student will create a computer generated working pattern which will be later used to create a stained glass design.

The student will create a design for a picture frame with a surrounding stained glass floral border which may be abstracted from nature. It should hold an 8"x 10" photographic print and may be free standing or hung upon either axis.

Materials

- IBM PC
- Disk drive and floppy disk
- Video monitor
- Printer
- Software- Delta Draw
- Device for controling the use of software (keyboard, mouse, digitizing, tablet or Koala pad, light pen)
- Stained glass
- Glass cutter
- Breaking pliers
- Groying pliers
- Come or copper foil solder + flux
- Soldering iron

Motivation:

Show the following:

1. Reproduction of stained glass windows from churches.

2. Student designed stained glass picture frames.

3. Student designed stained glass ornaments.

Development:

1. What must you consider when creating a design for a stained glass project?

2. How will you select color for this stained glass project?

3. For what reasons will you select opaque or translucent color?

4. For what reasons will you select organic or geometric shapes?

5. How will a free form edge affect your design, and where do you think you can use it?

6. Produce: Students will:
   - Select a floral or organic motif to use as a border design for the picture frame project.
   - Create a thumbnail sketch.
   - Boot up Delta Draw.
   - Begin to draw with the computer, the motif floral border design, including the thick dark line which will indicate the foil and soldering lines.
   - Fill the design with color using opaque and translucent-appearing color to give the feeling of mass or atmospheric space.
   - Save the final version of the stained glass pattern design on disk.
   - Print out 2 hard copies of the design.

## TOPIC 8: Textile Design

Performance Objectives: Students will be able to:

- create a computer graphic motif which will be structurally sound as a design element utilizing both positive and negative space
- utilize one of the following techniques for design repetition for fabric design:
  - a) black or butt joint
  - b) brick
  - c) half drop or dovetail joint
  - d) diamond
  - e) overlapping joint
- select to create either an organic motif or a geometric graphic motif

Aim: The student will create a computer graphic textile design in which a particular type of motif and pattern repetition is utilized.

Materials:

- IBM pc
- proper software (Delta Draw, P.C. Paintbrush, AutoCad, etc.)
- device for controlling the use of selected software (keyboard, mouse, digitizing tablet, light pen)
- video monitor
- printer

Motivation:

1. Display reproductions of oriental rugs and tapestry.

2. Display reproductions of Indian tapestry.

3. Display reproductions of American Indian and Mexican blankets.

4. Show examples of segments of dress, shirt, suit, slacks, textile.

Development:

1. What factors contribute to the beauty of all of these textiles?

2. What design elements are similar, despite all the differences in style, culture, geography, and manufacture?

3. What steps would you take as a textile designer to create your first design?

4. Procedure:
   - a) Decide upon what the textile will be used for.
   - b) What type of person is the textile design for?
   - c) Select organic or geometric type motif.
   - d) Begin to sketch motif idea concentrating upon positive and negative structure of space.

- e) Boot up computer software.
- f) Begin computer design of motif.
- g) Save motif design to floppy disk.
- h) Print motif design 4 or 5 times.
- i) Use hard copy of motif design and move around to help you decide upon the type of pattern repetition you would like to use for your textile.
- j) Use the software copy commands to copy your motif to the positions and patterns which you have selected.
- k) Save your motif pattern textile design.
- l) Retrieve and print a hard copy of your final textile design.

5. Demonstration:
   - a) Teacher boots up selected software.
   - b) Demonstrate the procedure to access commands from the menu.
   - c) Demonstrate drafting of motif.
   - d) Demonstrate save, retrieve functions.
   - e) Demonstrate copy and move functions of the software program to create motif patterns.
   - f) Demonstrate printing hard copy.

Summary:

The student will use computer graphics to enhance the concepts of textile design and pattern repetition discussed on page 100 of the "Introductory Art in the High School" curriculum guide of the Board of Education of the City of New York. The student will create an original textile design which will utilize both positive and negative space.

Assignment:

1. Cut out and bring to class 12 examples of different textile designs you may find in magazine advertisements.

2. Write a small critique of each sample and include the following:
   - a) Is the design pleasing to the eye?
   - b) Does the design utilize the space properly?
   - c) Does the design of the textile fit its use?
   - d) If not, why?
   - e) What changes if any would you make to its design? (motif or pattern repetition)

## TOPIC 9: Flat and Three-Dimensional Shape for Drawing and Designing

Performance Objecties: Students will be able to:

- Recognize shapes and properly identify them.
- recognize the effects of seeing basic shapes in complex objects
- will be able to produce basic shapes, three-dimensional shapes and shadows, specific effects, objects, patterns, and designs
- will be able to create drawings and designs in still life, landscape, portraits and the human figure as the basis for specialized art areas such as illustration, advertising, fashion design, jewelry design, paper mache, sculpture, quilting, architecture, drafting, cartooning.

Aim: How do we establish, recognize and develop the practical use of the basic shapes and form as an element of shape to draw and design? How do we relate these skills to various art mediums as outlined in the NYC high school art curriculum guide?

Materials:

Apple II, II+, IIe, IIc or compatible with 48K bytes, Koalaware's Micro-Illustrator or any updated programs, Baudville's Blazing Paddles (If 128K is available, student can use Broderbund's Dazzle Draw), DOS 3.3 disk drive, Video Monitor, a Koalapad Touch Tablet or some method of moving the cursor, formatted diskette, pencil or pen, paper, tracing paper, ruler/per student Additional software - Beagle Bros Apple Mechanic Typefaces, Datatransform's Fontrix

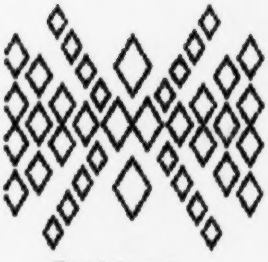
Motivation

Using the computer terminals and software for drawings and designs, students will learn concepts of shapes and space, relate them to the specialized design areas as outlined in the table of contents of the NYC high school art curriculum guide.

## TOPIC 10: Flat and Three-Dimensional Shape for Drawing and Designing

Sub Topic: Shape is the Second Basic Element of Design

Performance Objectives: Students will be able to:


DIAMOND

- . define shape and know shape as a basic element of design
- . recognize and identify the three most basic shapes and additional shapes
- . create a variety of shapes on the computer screen
- . pattern shapes in repetition to create rhythm
- . design shapes in size variety to create depth
- . move shapes around on the screen to create direction

Aim: What is a shape? What are the three basic shapes? How many other shapes can be named? What are some simple objects made with these shapes? What can we do with these shapes to produce patterns with rhythm, depth and direction? How can the shapes be create on the computer screen? To enhance, see pgs. 6,7,8,9, of the NYC high school art curriculum guide

Materials:

Apple II, II+, IIe, IIc or compatible with 48K bytes, Baudville's Blazing Paddles or Koalaware's Micro-Illustrator. (If 128K is available, students can use Broderbund's Dazzle Draw) DOS 3.3 disk drive, Video Monitor, Koalapad Touch Tablet or some method of moving the cursor, one formatted diskette per student

> Artists - Paul Klee, "the Niesen", 1915; Joan Miro, Art of Africa and Oceania; Piet Mondrian, "Broadway Boogie Woogie", 1942-43; Wassily Kandinsky, "To the right - to the Left", 1931; Pablo Picasso, "The Three Musicians", 1921; Marc Chagall, Stuart Davis, "Midi", 1954; Marsden Hartley, "Painting #5", 1914 and "Movement #2", 1916; Ellsworth Kelly, "Red, Blue, Green", 1963

Motivation:

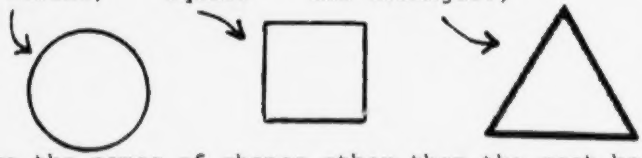
Teacher asks students in class to stand up and tell the class the five elements of art. Ask students who do not know to guess.

Procedure:

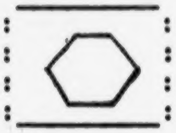
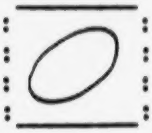
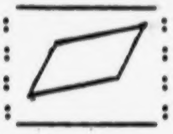
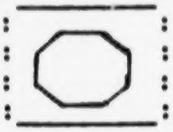
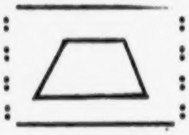
Teacher writes all the students' responses on the blackboard. Students are then asked to take down the following information. "The elements of design are line, shape, color, texture, and space."

What is definition of shape? (Students are to define shape as "any form with inner and outer space.")

What are the three basic shapes? (Students are to list the three most basic shapes as circle, square and triangle.)

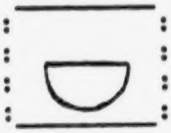


. What are the names of shapes other than the most basic shapes?

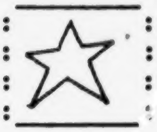
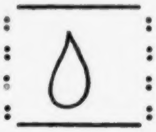
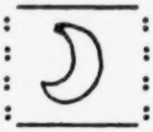
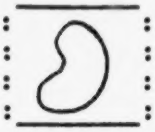
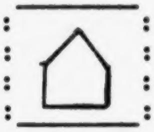
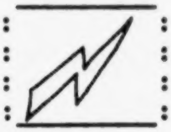






hexagon, oval, rhombus, octagon, trapezoid,

half-circles



. What are the names of different symbolic shapes?

star, tear drop, moon, kidney, house, thunderbolt

. How do we create various types of line with the computer? Open the disk drive door. Hold the diskette with the label end facing you. Insert the diskette with the label facing up into the disk drive and close the door. Now, turn on the monitor and turn on the computer.

. Follow the directions on the screen using the keys on the keyboard, and the palette or main menu will appear on the screen. For this lesson, we will limit the menu to these commands; "DRAW" and "LINE". We will limit the "BRUSH" to the small dot. Let's begin with "DRAW". Place the stylus on the Koala pad and place the cursor on the screen to "DRAW". With your other hand, press the top left button of the Koala pad. The screen will become a blank page ready for you to draw. Next, press the stylus onto the pad and see the cursor appear on the blank screen. Continue to press the top left button of the pad and draw with the stylus. To discontinue a line, lift your finger or stylus from the top left button and find a new place to start with the cursor. Again, see the cursor and press the top left button to begin the next line.

. Practice drawing circles, triangles and squares. Then, stop drawing shapes, and press the top left button on the Koala pad. You now see the palette again. Press the stylus down and direct the cursor to "LINE". then press the top left button again to get back on the drawing page and press the stylus to pad to make the cursor appear on the screen. Pressing the top left button will start the straight line. Moving the stylus will make the line appear. When you see the desired line, press the button again and the line you desire will remain.

- Practice drawing straight-lined shapes on "LINE" command. Try using the other commands, such as "LINES" and "OVAL" and "BOX".

- What is the priciple of design we can use to create a pattern using the shapes to form a rhythm? (repetition)

- Let's create a pattern using shapes in repetition using the command which you like best. Save the pattern.

- How can we further vary the shapes in repetition to create the illusion of depth? (vary the size)

- Let's create a pattern using repeating shapes in varying sizes to create the illusion of depth. Save as pattern 2

- How can we further create the effect of movement of shapes using the space of the computer monitor? (Move the shapes in a linear pattern around the screen)

- Let's create a pattern using repeating shapes in a linear pattern to create direction. Save as pattern 3

Summary:

Shape is the second basic element of design and drawing. A shape is any form. The most basic shapes are circle, triangle and square. We can use shapes together with the principles of design to create rhythmic patterns and illusions of depth and direction.

Homework/Assignment:

1. To create a drawing using one basic shape.
2. To create a drawing using all basic shapes.
3. To create a drawing using many different types of shapes in addition to the basic shapes.

Extra:

Create a shape pattern which could be used as a design for a fabric print. Create the shape pattern in a square format and show how it will look when repeated. The student must save the drawings on a formatted data disk. The student is to document the drawing by naming it with student's last name and class, and name drawings "one basic", "all basic", and "variety". If possible, make a print out of each drawing.

Note: For ERASERHEADS - there are various ways to erase. You can erase the whole screen by touching the pressure sensitive pad with your finger or the stylus to move the cursor to "ERASE" and follow the instructions by choosing the color you wish the screen to turn to. You can erase a single line by changing the color to the background color and (a) try to recreate the line to be erased with a thicker brush or (b) change the command to "BOX" and "black box" the shape out or (c) use a thick dot and dot the line out.

# TOPIC 11: Flat and Three Dimensional Shape for Drawing and Designing

Sub Topic: Shapes and their Size and Place in space

Performance Objectives: Students will be able to:

- define foreground, middle distance and background
- create shapes next to each other to create a flat composition
- execute directionality to create a foreground area, a middleground and a background area
- discuss looking through a window to define the picture plane and conclude relationships of placement and size as shapes or objects appear further away

Aim:

How can three-dimensional space be represented on a flat drawing or design surface? Where can shapes be placed in a drawing to represent different space? Where is the foreground of a drawing, the middle distance and the background of the drawing surface? Where do we place a shape to look as if it is in the foreground, the background? What happens to the size of a shape as it moves further back in space? To enhance see pgs. 6,7,8, and 9 of the NYC high school art curriculum guide.

Materials:

Apple II, II+, IIe, IIc or compatible with 48K bytes, Baudville's Blazing Paddles, or Koalaware's Micro-Illustrator. (If 128K is available, student can use Broderbund's Dazzle Draw DOS 3.3 disk drive, Video Monitor, a Koalapad Touch Tablet or some method of moving the cursor, one formatted diskette per student (software one per three students).

Artists- Juan Gris, "Eggs", 1911; Patrick Henry Bruce, "Still-Life", 1929-30; Pablo Picasso, "The Studio", 1927-28.

Motivation:

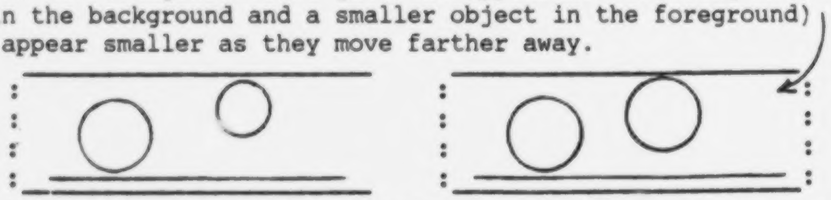
Teacher will ask a student to draw two circles either on the blackboard or on the computer screen. Draw one circle close to the viewer and the other placed farther away from the viewer.

Procedure:

1. How many different ways can we create the illusion that a shape or an object is closer to the viewer or farther away from the viewer? (by varying the size and the place on the drawing or designing plane, we can create the illusion of spacial relationships)
2. What is the area of the drawing which appears to be closer to the viewer? (the foreground)

3. Where would we place a shape such as a circle so that it would give the appearance of being close to the viewer? (near but not touching the bottom of the page or screen)

4. What is the appropriate size of a shape in the foreground of a picture? (the size can be small or large, depending upon the illusion that is wished to be created - an object or shape drawn the same size in the background and in the foreground will give the appearance of being a larger object in the background and a smaller object in the foreground) Objects should appear smaller as they move farther away.



5. What is the area in the drawing which appears to be farther away from the viewer? (the background)

6. Where on the drawing area should shapes or objects be placed so that they appear to be in the background? (shapes in the background cannot be near the bottom of the paper, therefore they would be placed from the center to the top of the drawing area)

7. In which space of the drawing, the foreground, middle distance, or the background, is the shape that reaches from near the bottom to near the top of the drawing area? (a foreground shape)

8. What does moving from the foreground to the background do to the size of an object? (shapes that receed in space gradually decrease - the shape will appear smaller)

Open the disk drive door. Hold the diskette with the label end facing you. Insert the diskette with the label facing up into the disk drive and close the door. Now, turn on the monitor and turn on the computer.

Follow the directions on the screen using the keys on the keyboard and the palette or main menu will appear on the screen. For this lesson, we will limit the menu to the "BOX" and the "OVAL" command. We will limit "BRUSH" to the small dot. Place the stylus on the pad and see it in the "BOX" command on the screen. Press the top left button of the Koala pad and a blank screen will appear. Place the stylus on the pad and the cursor will appear. Press and move the stylus in a direction and see a box appear. Press the top left button of the pad and the box will remain. Repeat the process by pressing the stylus on the pad and again the cursor will appear. Press the top button to return to the menu and a different shape.

. Experiment with the foreground, background and middle distance areas of the drawing or designing page. Create large and small shapes and move them around by placing them on different areas of the page or screen. Try to visualize these simple shapes as buildings, planets or some other objects.

9. Experiment with shapes in the foreground. Overlap shapes by placing one in front of another and erase the lines which would not be seen. Overlap carefully and create the illusion of an object being closer and another object being behind the first.

10. Can two shapes or objects, one place slightly in front of the other, appear to be set or sitting on a straight horizontal line? (no - two objects both set on a horizontal line will appear to be next to each other, not in front or behind the other.)

11. Visualize the screen as a window. Create a collage of different size shapes. Be aware of the various areas of the drawing area and create an abstract scene and the illusion that there is a great amount of depth and space to the drawing area.

Summary

1. Shapes can create the illusion of space and depth in space. Shapes placed in different areas of the drawing area will produce spacial effects of near and farther away.

2. The area near the viewer is the foreground. Shapes set or sitting near the bottom of the drawing area will appear to be close or in the foreground.

3. Shapes set or sitting on a horizontal line placed from the middle to the top of the drawing area appears to be farther from the viewer or deeper into space.

4. The area farther away from the viewer or deeper into space is the background. Shapes that move back or deeper or farther away decrease in size.

Homework/Assignment:

The student will complete a drawing contrasting shapes in space. One drawing will be an interesting design using shapes all on the same straight horizontal line, using three horizontal lines; one in the foreground, one at a middle distance and the third in the background.

Extra:

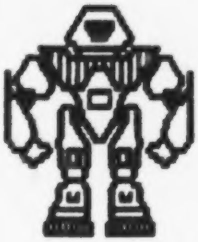
Create a still-life drawing of fruit on a table in the foreground, a bowl of fruit at middle distance and a painting hanging on the wall in the background. The student is to save the drawing on a formatted data disk. The student is to document the drawing by naming it with student's last name and class, and name drawings. Save the assignment as "Shapes in space."

Note: For ERASERHEADS - There are various ways to erase. You can erase the whole screen by touching the pressure sensitive pad with your finger or the stylus to move the cursor to "ERASE" and follow the instructions by choosing the color you wish the screen to turn to.

You can erase a single line or area by changing the color to the background color and (a) try to recreate the line to be erased with a thicker brush or (b) change the command to "Box" and "black box" the shape out or (c) use a thick dot and dot the line or area out.

## *TOPIC 12: Flat and Three-Dimensional Shape for Drawing and Designing*

Sub Topic: Building Basic Shapes into Complex Shapes and Images



Performance Objective: Students will be able to:

- name the basic shapes
- use outlines to build basic shapes in complex shapes
- analyze complex images for basic shapes
- build upon complex shapes to refine and finesse created images

Aim:

What are the basic shapes we use to create more complex shapes and images? How do these shapes make drawing things we see much easier? How can we find basic shapes in more complex images? How can we then build the basic shapes to create the complex shapes and images? To enhance, see pgs. 8, 9, 19 and 21 of the NYC high school art curriculum guide.

Materials:

Apple II, II+, IIe, IIc or compatible with 48K bytes, Baudville's Blazing Paddles, or Koalaware's Micro-Illustrator. (If 128K is available, student can use Broderbund"s Dazzle Draw), DOS 3.3 disk drive, Video Monitor, a Koalapad Touch Tablet or some method of moving the cursor, one formatted diskette per student.

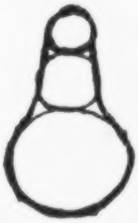
Artists - Pablo Picasco, "The Three Musicians", 1921; Francis Picabia, "Dances at Spring", 1912; Gerald Murphy, "Wasp and Pear", 1927; Edward Hopper, "Early Sunday Morning", 1930.

Motivation:

Teacher can use a poster or master artist reproduction analyzed for basic shapes with chalk or overlays. It is shown to the class as an "analyzed painting". "We can look at real life or paintings to see the simple shapes in the more complex images."

Procedure:

Teacher proceeds with a drawing of three circles of a snowman and asks the students to connect the outer sides of the circles.



1. What does it look like now? (the snowman turns into a vase, or an upside-down light bulb, or a bottle to an Organgina drink, etc.)
2. What can visually or actually connecting basic shapes do? (create new shapes)

3. What can an artist do to make drawing complex shapes such as animals, and scenes such as landscapes and still lives easier? (the artist can look for basic shapes in the more complex ones)

4. Let's begin by creating shapes on the computer screen. Open the disk drive door. Hold the diskette with label end facing you. Insert the diskette with the label facing up into the disk drive and close the door. Now, turn on the monitor and turn on the computer. Follow the directions on the screen using the keys on the keyboard and the palette or main menu will appear on the screen. For this lesson, we will limit the menu to these commands; "OVAL" and "LINE". We will limit the "BRUSH" to the small dot.

5. Let's begin with "OVAL". Place the stylus on the Koala pad and place the cursor on the screen to "OVAL". With your other hand, press the top left button of the Koala pad. The screen will become a blank page ready for you to draw. Now, press the stylus onto the pad and see the cursor appear on the blank screen. Press the top left button of the pad top - begin in the middle of the shape. Move the stylus in a direction on the pad and see the oval size and shape change. When you see the desired shape, press the left button on the pad and the shape is set. Press the stylus on the pad again and see the cursor. Repeat to create the next shape.

6. Create different size ovals and overlap them, place them apart and near. Now using the "DRAW" command connect the outside of the shapes on the screen to create "exotic" shapes.

   Let's stop and look around to see the shapes that have been created by the students in the class. Use your imagination to see unusual creatures or familiar objects.

Summary:

Shape is the second basic element of design and drawing. A shape is any form. The most basic shapes are circles, triangles and squares. We can use shapes together with the principles of design to create rhythmic patterns and illusions of depth and direction.

Homework/Assignment:

Using more control, place simple shapes next to each other to create familiar objects that you have in mind, such as a car, a bear, a house, a butterfly, a seashell, a pear. The object should not be itself a simple shape, like an orange, and not something made up of repeated shapes such as flower petals.

Extra:

Students will cut out pictures from magazines or newspapers and analyze the images chosen for basic shapes: circles, squares, boxes and triangles. Student will recreate the image from the newspaper with the assistance of the basic shapes. Save the work on a formatted data disk. The student is to document the drawing by naming it with student's last name and class, and name drawings "Building Shapes".

Note: For ERASERHEADS - There are various ways to erase. You can erase the whole screen by touching the pressure sensitive pad with your finger or the stylus to move the cursor to "ERASE" and follow the instructions by choosing the color you wish the screen to turn.

You can erase a single line or area by changing the color to the background color and (a) try to recreate the line to be erased with a thicker brush or (b) change the command to "BOX" and "Black box" the shape out or (c) use a thick dot and dot the line or area out.

## TOPIC 13: Overlapping Shapes to Form New Ones

Performance Objectives: Students will be able to:

- experience production of computer-generated geometric shapes, changing their size and aspect.
- realize that repetition of shape is pleasing to the eye but that variation within the shape prevents boredom.
- see new shapes created by overlapping ones.
- create a composition of informal or asymmetrical balance.

Aim: How can the microcomputer be used to combine shapes to form more complex shapes.

Materials:

Apple or Tandy 1000 computer, printer, Koala pad, Micro Illustrator or any graphic program that allows the making of geometric shapes and the filling of shapes with values and textures.

Motivation:

How can we overlap shapes to make dynamic new ones.

Development:

1. Teacher demonstration: The making of and overlapping of shapes on the computer. Point out new shapes that result from overlapping. Demonstrate varying a shape as it is repeated, asking for student suggestions.

2. Introduce or review the use of the words "value" and "texture" in art. "Composition", "formal and symetrical balance", "informal and asymmetrical balance" may also be reviewed.

3. When the first student has successfully completed covering his screen with his design, demonstrate how he can fill areas with textures and values (color on a color monitor).

4. Review the printing process. Introduce or review the process for deleting old material on a storage disk in order to make room for new work.

5. Print two copies of your finished graphic, keeping one and handing one in. Now, it's safe to delete your files from the disk, at least all but the last one.

6. Save your work each day under a different file name (i.e., Shapes 1 followed by Shapes 2 etc.)

Summary:

Put up designs. Evaluate first in terms of overall effect. Discuss which designs carry exceptionally well and the part the use of shapes, values, textures, and composition play in that success.

Assignment:

Fill your monitor with overlapping geometric shapes, varying each shape in size/or aspect. For instance: a circle may be changed in radius, stretched to an ellipse, allowed to go beyond the monitor, intertwined; small circles may be nestled off-center in larger ones.

Look for the new shapes formed by the overlapping. Fill spaces with textures and colors and/or values. (If you are using a black and white monitor, these colors will appear as values.)

Repeat the textures and values in order to carry an observer's eye throughout your composition.

## *TOPIC 14: Flat and Three-Dimensional Shape for Drawing and Designing*

Sub Topic: Shape into Three-Dimensional Form

Performance Objective: Students will be able to:

- name the basic and the more complex 3-D forms and know the flat shapes from which they are derived
- create the 3-D forms
- use different techniques to create the 3-D illusion
- apply 3-D forms to drawing and designing

Aim:

What are the basic three-dimensional forms? From which flat shapes are these three-dimensional shapes derived? How do we create the 3-D forms? What devices can we use to create the illusion of 3-D? Why is the 3-D form an illusion? What applications are there for 3-D in drawing and designing? to enhance, see pgs. 8, 9, of the NYC high school art curriculum guide.

Materials:

Apple II, II+, IIe, IIc or compatible with 48K bytes, Baudville's Blazing Paddles, or Koalaware's Micro-Illustrator. (If 128K is available, student can use Broderbund's Dazzle Draw), DOS 3.3 disk drive, Video moving the cursor, one formatted diskette per student

Artists - see reproductions to discuss Cubism as an artistic extension of 3-D form - George Braque, "Still Life with Violin and Pitcher", 1910; Charles Sheeler, "Barns", 1917

Motivation:

"What makes 3-D shapes or forms different from the 2-D shapes? (since the dimensions of the 2-D shapes are height and width, it is the third dimension of depth which is the difference)

Procedure:

1. Teacher asks if there are any students in the class who would like to demonstrate their ability to draw any three-dimensional form.

   From what three basic shapes are the three basic three dimensional forms made? (circle, triangle and square)

2. What is the three-dimensional form made from a circle? (sphere or ball)

3. What is the three-dimensional form made from a triangle? (pyramid)

4. What is the three-dimensional form made from a square? (cube)

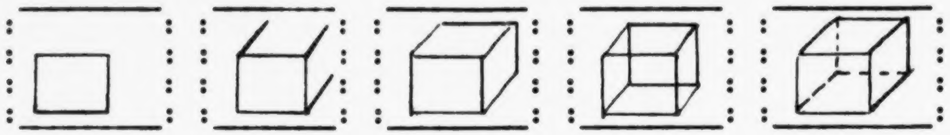
5. What are the names of other three-dimensional forms? (cone, cylinder, prism, rectangular solid, half sphere)

6. What are some basic rules to follow when drawing three-dimensional forms? (the dimensional of depth receeds back in space. The movement back in space is made with diagonal lines or a diagonal direction)

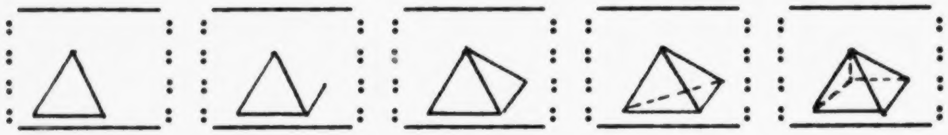
   a. The shapes the three-dimensional form has as its sides and its top determine the shapes to use to create the full form. For example, the cylinder has basic rectangular sides, however the top is a circle, so the rectangular edge which borders the circular top will curve instead of remaining straight

   b. The curved three-dimensional form will show a small reflected light peaking around the "edge" of the form. We can show this light with a contour line.

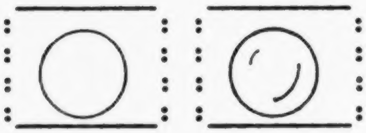
Let's create the three-dimensional shapes.



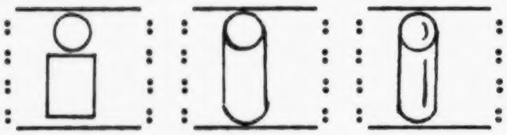
CUBE



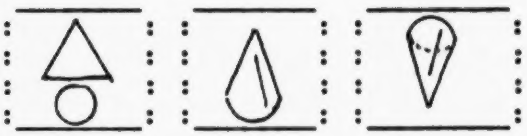
PYRAMID



SPHERE



CYLINDER



CONE

7. How do we create various three-dimensional shapes with the computer? Open the disk drive door. Hold the diskette with the label end facing you. Insert the diskette with the label facing up into the disk drive and close the door. Now, turn on the monitor and turn on the computer.

8. Follow the directions on the screen using the keys on the keyboard and the palette or main menu will appear on the screen. For this lesson, we

will limit the menu to the shape commands "BOX" and "OVAL" and the "LINE" and "LINES" commands. We will limit the "BRUSH" to the small dot.

9. Let's begin with "BOX". Place the stylus on the Koala pad and place the cursor on the screen to "BOX". With your other hand, press the top left button of the Koala pad. The screen will become a blank page ready for you to draw. Now, press the stylus onto the pad and see the cursor appear on the blank screen. Press the top left button of the pad and the cursor will remain on the screen. Move the stylus in a direction on the pad and see the box develop into different sizes and shapes. When you see the desired shape, press the top left button on the pad and the shape is set.

   a. Practice drawing the three-dimensional forms using a combination of commands: "BOX" and "LINES" and "OVAL" and "DRAW".

   b. Just as building basic shapes will develop into more complex shapes, building three-dimensional forms will create complex three-dimensional forms

   c. What forms in a still-life can be represented using a sphere? (a variety of fruit forms, the general mass of a flower bouquet)

   d. What forms in a landscape can be represented using a pyramid? (mountains, pyramids, pine or fur tree masses)

   e. What 3-D forms would you use to represent forms in a cityscape? (pyramids, rectangular solids, cones)

   f. Why is 3-D form an illusion? (depth, the third dimension can only be an illusion on a two dimensional surface, a surface which lacks the third dimension completely.

Summary:

Simple shapes are the first step to creating three-dimensional form. We can create the illusion of depth by using certain rules of thumb, such as knowing the shapes which compose the three-dimensional form, using the diagonal to "push" the form back into deep space, and using the reflected light as a contour to create curved or rounded form.

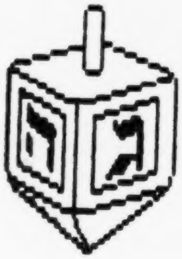
Homework/Assignment:

Student will demonstrate their ability to draw the three basic and two additional three-dimensional forms.

Extra:

Create a more complex three-dimensional form by building the forms in three dimensions as we did in two-dimensional shape. The work may be a single, complex three-dimensional form or a scene using complex three-dimensional forms. The student is to save the drawings on a formatted data disk. The student is to document the drawing by naming it with student's last name and class, and name drawings "3-D form". If possible, make a print-out of each drawing.

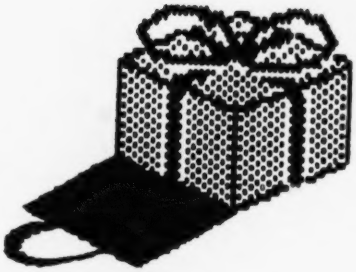
Note: For ERASERHEADS - There are various ways to erase. You can erase the whole screen by touching the pressure sensitive pad with your finger or the stylus to move the cursor to "ERASE" and follow the instructions by choosing the color you wish the screen to turn to. You can erase a single line or area by changing the color to the background color and (a) try to recreate the line to be erased with a thicker brush or (b) change the command to "BOX" and "black box" the shape out or (c) use a thick dot and dot the line or area out.



# TOPIC 15: Flat and Three-Dimensional Shape for Drawing and Designing

Sub Topic: The Shapes of Cast Shadows

Performance Objective: Students will be able to:



- define cast shadow.
- become acquainted with light source
- conceptualize the positions of the light source, the object and the cast shadow
- create the proper representation of an object's cast shadow as it falls on other forms
- understand how a cast shadow can ground an object or make it float
- understand the moods of shadows
- understand the interesting qualities of shadows

Aim:

What is a cast shadow? What causes a cast shadow? How can a shadow ground shape - flat or 3-D? How can it make a shape appear to float? What shape does a cast shadow take? What happens to the shape of a cast shadow which falls on another object? To enhance, see pgs. 8 & 9 of the NYC high school art curriculum guide.

Materials:

Apple II, II+, IIe, IIc or compatible with 48K bytes, Baudville's Blazing Paddles, or Koalaware's Micro-Illustrator. (If 128K is available, student can use Broderbund's Dazzle Draw), DOS 3.3 disk drive, Video Monitor, a Koalapad Touch Tablet or some method of moving the cursor, one formatted diskette per student.

Artists - Georges Seurat, "Sunday Afternoon on the Island of La Grande Jatte", 1884-86; Giorgio de Chirico, "The Uncertainty of the Poet", 1913; Juan Gris, "Sunblind", 1914.

Motivation:

Ask the students if anyone in the class understands the way a sundial works to tell the time of day?

Procedure:

Either student or teacher explains that sundials are time telling devices which indicate the time of day by the shadow cast by the gnomon on a round dial marked with linear demarcations of hour.

1. What causes the shadow on a sundial? (the interference of the gnomon between the sun and the round dial)

2. What is the light source of the sundial? (the sun itself)

3. How is the length of the shadow effected when the sun is directly above the gnomon or any other object? (the shadow is shorter than the form itself - the length of the shadow increases as the source becomes more horizontal or to the right or left of the object)

4. What is a cast shadow? (a cast shadow is a dark area which is thrown off from the object where light has been intercepted and represents the approximate shape of the intercepting body or object)

5. What is the shape of the cast shadow? (the shape resembles the shape of the object interfering with the light source and the surface. However, it acts as if it were rubberized, stretching longer or shorter with the change of the light sources angle)

6. What happens to the shadow when it comes in contact with another object? (the shape of the shadow changes and will creep about the contour of the forms in its way)

7. How can a shadow ground an object or figure? (when the shadow touches or is attached to the object, the object appears as if it is on the ground.

8. How can a shadow create the effect that an object is floating? (when the shadow is detached or separate from the object or form, then it will appear to be floating. The farther away the shadow is from its object, the farther away the object will appear to be from the ground)

9. What is an example of an object which will have a detached shadow? (balloons, clouds, airplanes, birds)

10. What sort of mood is created when very long shadows are apparent? (the mood is eerie or mysterious; the mood is one which you would feel late in the day or near evening, or in the very beginning of the day. The mood is that of an ending or perhaps a beginning since these are the shadows created early in the morning or later in the afternoon)

11. Let's create an object with a cast shadow. Open the disk drive door. Hold the diskette with the label end facing you. Insert the diskette with the label facing up into the disk drive and close the door. Now, turn on the monitor and turn on the computer. Follow the directions on the screen using the keys on the keyboard and the palete or main menu will appear on the screen.

12. We'll begin by creating a flat, tall rectangle. For this lesson, we will use the shape command "BOX" and the "LINE" commandd. We will limit the "BRUSH" to the small dot. Let's begin with "BOX". Place the stylus on the Koala Pad and place the cursor on the screen to "BOX". With your other hand, press the top left button of the Koala pad. The screen will become a blank page ready for you to draw. Now, press the stylus onto the pad and see the cursor appear on the blank screen. Press the top left button of the pad and the cursor will remain on the screen. Move the stylus in a direction on the pad and see the box develop into different sizes and shapes, press the top left button on the pad and the shape is set.

13. Set the tall rectangle in the middle of the screen. Begin another rectangle by starting at the lower left corner of the first rectangle and pull it out to the right to lay flat and long as the rectangle's shadow would. Switch the commands from "BOX" to "LINE" and create a diagonal line at the right edge of second rectangle moving diagonally to the left until it meets the other. Switch to the "FILL" command and use a "COLOR" command to switch to a fill pattern of your choice. Then erase the straight line to the right of the second rectangle and the line of the second rectangle which bisects the first rectangle. The image is create.

Summary:

A cast shadow is the approximate shape of the object which intercepts the light from the light source. The cast shadow creates the illusion that an object is either sitting on the ground or floating in the air. The cast shadow will change in shape according to the angle of the light source and will relate to a second object it falls on by creeping about it.

Homework/Assignment:

Create an abstract outdoor scene in which there are two basic solid grounded forms with distance between them. Create the scene so that it is late in the afternoon when the shadows are very long, and show the shadow of one form fall on the second form.

Extra:

Create a more complex scene, using a variety of forms and create the shadows so that the sun or light source is in front of and slightly to the left of the objects. The student must save the drawings on a formatted data disk. The student is to document the drawing by naming it with student's last name and class, and name drawing "shadow". If possible, make a print out of each of the drawings.

Note: For ERASERHEADS - There are various ways to erase. You can erase the whole screen by touching the pressure sensitive pad with your finger or the stylus to move the cursor to "ERASE" and follow the instructions by choosing the color you wish the screen to turn to. You can erase a single line by changing the color to the background color and (a) try to recreate the area or line to be erased with a thicker brush or (b) change the command to "BOX" and "black box" the line or area out or (c) use a thick dot and dot the line or area out.

# *TOPIC 16: Flat and Three-Dimensional Shape for Drawing and Designing*

Sub Topic: Shape in Positive and Negative Space and Repeats

Performance Objective: Students will be able to:

- define positive and negative space and shapes
- create negative shapes within a contained positive design shape
- create negative shapes as a result of repeating the design using different techniques

Aim:

What is positive space? What is negative space? When a positive shape is created, how does the negative shape appear? What additional shapes are created when the shape is repeated in a pattern? What different patterns can be used to created different shapes in the negative space? What is a tessellating design? To enhance, see pgs. 7, 100 and 101 of the NYC high school art curriculum guide.

Materials:

Apple II, II+, IIe, IIc or compatible with 48K bytes, Baudville's Blazing Paddles, or Koalaware's Micro-Illustrator. (If 128K is available, student can use Broderbund's Dazzle Draw), DOS 3.3 disk drive, Video Monitor, a Koalapad Touch Tablet or some method of moving the cursor, one formatted diskette per student

Artists - Prints of M.C. Escher; Pablo Picasso, "Guernica", 1937; Ellsworth Kelly, "Red, Blue, Green", 1963.

Motivation:

Teacher will present a prepared picture or quickly draw a face placing only half the features on the complete shape of the face (one eye, one nostril, half the mouth) and when the teacher asks the class the subject of the drawing, student should respond with "a face". The answer is correct, however the student should be aware of the amount of detail left out in negative space

Procedure:

1. What is missing in the picture? (half the features of the face are missing)
2. Why does the picture appear to be a face when it is apparent that it is only half a face? (the observer's knowledge fills in the missing elements)
3. What are the positive elements of the picture of the face? (the elements that are drawn are the positive elements)
4. What are the negative elements of the picture of the face? (the space or area which is left blank is the negative element of the picture)

5. What happens when a design drawn within a given area has contained both positive and negative areas? (the areas could become well defined - so much so that the positive area becomes a shape - and the negative area could also become a shape - because a shape is any form with inner and outer space.

6. The areas could also, if they are well balanced, become meshed to the point of becoming a figure and ground puzzle where it is difficult to tell which is the positive shape and which is the negative shape)

7. What are some different ways we can repeat a design to create positive shapes with resulting negative shapes? (the design could be repeated in a checkerboard pattern, brick pattern, diagonal pattern or ogee pattern.)

8. To what applications could we put these types of designs? (interior design elements - such as wall paper, tiles, carpeting, bedspreads, sheets; paper design elements such as napkins, table cloths, tissues; and fabric design elements - such as cloths, knits, prints).

9. Let's create a simple design using a curved line in a small square. Open the disk drive door. Hold the diskette with the label end facing you. Insert the diskette with the label facing up into the disk drive and close the door. Now, turn on the monitor and turn on the computer.

10. Follow the directions on the screen using the keys on the keyboard and the palette or main menu will appear on the screen. For this lesson, we will limit the menu to these commands: "BOX", "DRAW" and "FILL". Set the "BRUSH" command for small dot.

11. Let's begin with "BOX". Place the stylus on the Koala pad and place the cursor on the screen to "BOX". With your other hand, press the top left button of the Koala pad. The screen will become a blank page ready for you to draw on.

12. Now, press the stylus onto the pad and see the cursor appear on the blank screen. The cursor indicates the corner of the box. Press the top left button of the pad to set the corner of the box in the proper place.

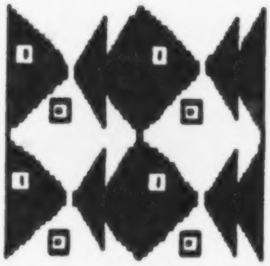
13. Now move the stylus in a direction and pull the box open. When the box is the desired shape, again press the top left button of the pad and the shape is set.

14. Draw a moderately small box. Change the commands to "DRAW" and create a curved line in the box, touching two sides of the box. Change to the "FILL" command and fill in one of the two areas. Finally, in the unfilled or negative area, create a small positive shape. Label the positive area, the negative area and the positive shape of the design.

15. What is created in the small box? (three shapes are created, one positive or filled in shape, one negative or unfilled in shape and another positive shape in the negative area or shape)

16. What is a tessellating design? (a tessellating design or pattern is one which has a checkered appearance and which creates new shapes when original shapes are connected or surrounded in the patterned design)

Summary:



Positive space is any area in which there has been produced a drawing of any line or form. Negative space is any area which is missing or empty or has not been drawn. When positive space surrounds negative space, a shape is formed and the reverse is true. When these shapes are well balanced, the two areas become meshed. And when these designs are repeated, a tessellating pattern results creating new shapes and unexpected designs.

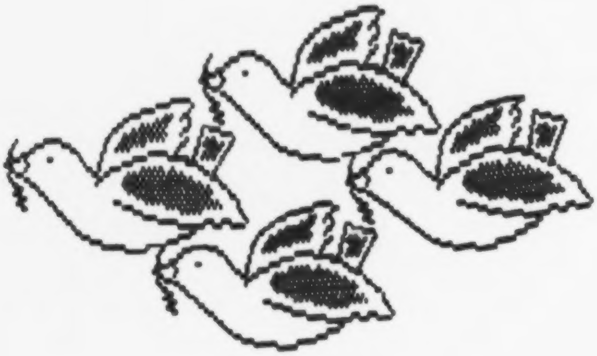
Homework/Assignment:

Student is to use the created box design and using the "CUT" and "PASTE" commands, create a tesselating pattern with a checkerboard, brick, diagonal, or ogee repeat.

Extra:

Create a recognizable image, such as a bird, butterfly, star, etc. and create the new shapes by repeating and touching or connecting the images. The student must save the drawings on a formatted data disk. The student is to document the drawing by naming it with student's last name and class, and name drawings "pattern". If possible, make a print-out of each drawing.

Note: For ERASERHEADS - There are various ways to erase. You can erase the whole screen by touching the pressure sensitive pad with your finger or the stylus to move the cursor to "ERASE" and follow the instructions by choosing the color you wish the screen to turn to. You can erase a single line by changing the color to the background color and (a) try to recreate the line to be erased with a thicker brush or (b) change the command to "BOX" and "black box" the shape out or (c) use a thick dot and dot the line out.

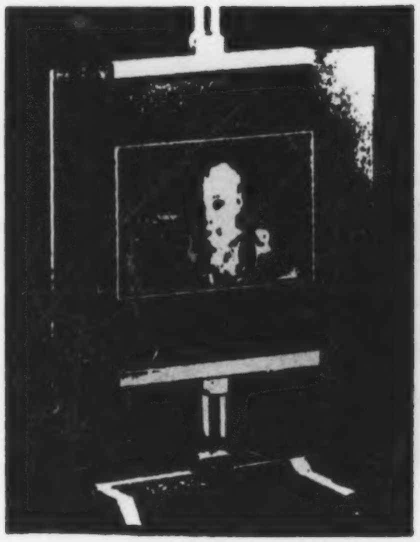


# TOPIC 17: Flat and Three-Dimensional Shape for Drawing and Designing

Sub Topic: Shape, the Matte and Picture Frame

Performance Objective: Students will be able to:

- define matte and frame
- experiment with frame shapes and finally choose a frame shape for a drawing or painting design shape
- create a pleasing wall arrangement of many different size and shape paintings



Aim:

What is a matte? How is it different from a frame? Why is complete artwork matted, or framed, or both? How does the shape of the frame contribute to the total effect of the drawing or painting? Which shapes are conventionally used? What type of painting does not use frames? How do we arrange the final art collection to make a pleasing wall area using positive and negative space? To enhance, see pge. 9 of the NYC high school art curriculum guide.

Materials:

Apple II, II+, IIe, IIc or compatible with 48K bytes, Baudville's Blazing Paddles, or Koalaware's Micro-Illustrator, (If 128K is available, student can use Broderbund's Dazzle Draw), DOS 3.3 disk drive, Video Monitor, a Koalapad Touch Tablet or some method of moving the cursor, one formatted diskette per student

Artists - A trip to the neighborhood frame shop is recommended.

Motivation:

After the print, drawing, photograph or painting is completed how do you decide the matte and/or frame suitable for hanging?

Procedure:

1. Very often, the frame will cost more than the artwork itself. What is a matte? (A matte is a border of cardboard or other material serving as a frame or part of a frame of a picture)

2. What is the purpose of a matte/and or frame? (The frame brings the artwork to a professional conclusion. The frame not only protects the artwork and provides a place from which the art may be hung, the frame also adds a decorative element to the art and completes it.)

3. How do we decide on the shape and size of the frame? (We try to work out a method of visualizing how the art will look after it has been framed.)

4. One way is to create different answers. Using the "BOX" command on the computer, let's create several answers to the question of framing. Open the disk drive door. Hold the diskette with the label end facing you. Insert the diskette with the label facing up into the disk drive and close the door. Now, turn on the monitor and turn on the computer.

5. Follow the directions on the screen using the keys on the keyboard and the palette or main menu will appear on the screen. For this lesson, we will limit the menu to these commands: "BOX" and "FILL".

6. Set the "BRUSH" command for small dot. Let's begin with "BOX". Place the stylus on the Koala pad and place the cursor on the screen to "BOX". With your other hand, press the top left button of the Koala pad.

7. The screen will become a blank page ready for you to draw on. Now, press the stylus onto the pad and see the cursor appear on the blank screen. The cursor indicates the corner of the box.

8. Press the top left button of the pad to set the corner of the box in the proper place. Now move the stylus in a direction and pull the box open. When the box is the desired shape, again press the top left button of the pad and the shape is set.

9. Draw a moderately small box. this box will represent the artwork. Let's try a substantially larger box around the art to represent the matte, and then a thinner box around the matte to represent a thin wooden frame.

10. Evaluate the artwork. Is the art lost in a large matted area? Should the frame command more importance than a thicker matte? Ask yourself a few of these questions and then try different sizes. Perhaps try putting the box into a triangular frame or an oval frame. Do the shapes collide?

11. What shape does the classic frame take? (the classic frame will mimic the shape of the art in a slightly larger size. The decoration on the wood will create a different effect)

12. What type of painting does not call for a frame? (an oversize painting such as an Alex Katz or an Expressionistic painting, some of which have the painting extended around the sides of the painting)

13. Why can a wall arrangement include the apparent absence of a painting and still be pleasing? (The arrangement is making use of positive and negative space)

Summary:

A matte is a border that can serve as a frame. A frame or matte and frame or matte and frame bring a piece of artwork to a professional conclusion. The shape of the frame should complement the shape of the artwork. Oversized paintings are hung in museums without frames. Paintings can be arranged in an interesting way using positive as well as negative spaces in the arrangement.

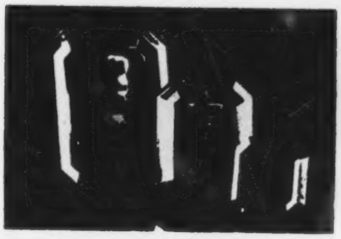
Homework/Assignment:

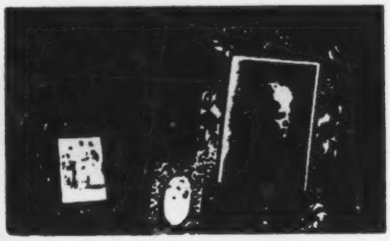
Student is given three vertical rectangular, two horizontal rectangular, one square and one oval painting to hang and arrange on a single wall, above a sofa. Create an interesting arrangement.

Extra:

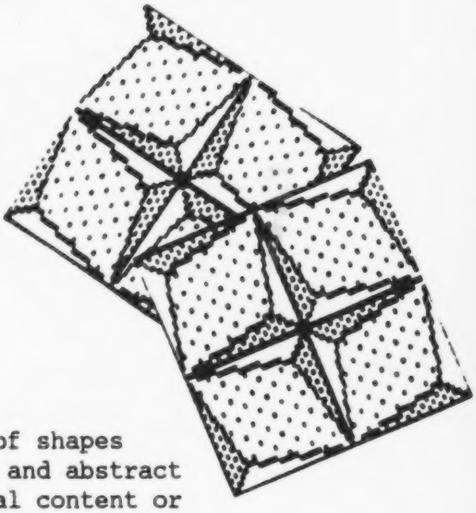
Create a pleasing frame for an old photograph taken of three children standing together. Create a linear design on the frame which would given a turn-of-the-century ornate look to the old photo. The student must save the drawings on a formatted data disk. The student is to document the drawing by naming it with student's last name and class, and name drawings "arrangement". If possible, make a print out of each drawing.

Note: For ERASEHEADS - there are various ways to erase. You can erase the whole screen by touching the pressure sensitive pad with your finger or the stylus to move the cursor to "ERASE" and follow the instructions by choosing the color you wish the screen to turn to. You can erase a single line by changing the color to the background color and (a) try to recreate the line to be erased with a thicker brush or (b) change the command to "BOX" and "black box" the shape out or (c) use a thick dot and dot the line out.





## *TOPIC 18: Flat and Three-Dimensional Shape for Drawing and Designing*



Sub Topic: Shape Creates Mood and Conveys Emotion

Performance Objective: Students will be able to:

- analyze shapes and identify them as abstract or representational
- associate mood or emotion with types of shapes - curved shape, angular shape, abstract, representational
- create a mood drawing using abstract and representational shape

Aim:

What makes an artist's work successful? What types of shapes express emotion? Why do both representational shape and abstract shape create an emotional response? Why can emotional content or mood only be implied? What is reading into a work of art? What mood or emotion do you feel when seeing each shape? How do shapes work together to create mood? To enhance, see pgs. 8 & 9 of the NYC high school art curriculum guide.

Materials:

Apple II, II+, IIe, IIc or compatible with 48K bytes, Baudville's Blazing Paddles, or Koalaware's Micro-Illustrator. (If 128K is abailable, student can use Broderbund's Dazzle Draw), DOS 3.3 disk drive, Video monitor, a Koalapad Touch Tablet or some method of moving the cursor, one formatted diskette per student.

Artists - Piet Mondrian, "Broadway Boogie Woogie", 1942-43; Georgie O'Keefe, "Red Hills and the Sun", 1927; Marsden Hartley, "Forms Abstracted", 1913; Pablo Picasso, "Guernica", 1937; teacher can discuss shape in Op art and in Surrealism.

Motivation:

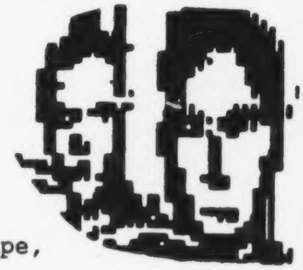
Teacher draws an empty circle on the computer screen and asks the class to look at the image. Then to feel spontaneously and think about how it makes them feel and why? Does it remind the student of something or did the feeling or mood come from something totally abstract?

Procedure:

Allow students to respond. Was there any mood felt? Was there any mood created by the empty circle? Record responses. Suggest that it seemed to be a happy picture because it looks something like a bubble, and bubbles are fun and happy.

1. Do the same thing with a triangle. Does anything change? (the shape is completely different, straight and angular therefore the "feel" of the shape is completely different)

2. What do the different lines of the shapes imply? (Generally, round and curvy shapes imply soft, warm, smooth, safe things with freedom to move and flow; angular and straight shapes are more stable, but sharp and harmful, hard and cold).



3. How do curvy, round shapes make you feel? Why? What connotations can you think of for circles, ovals, half-circles, amoeboid shapes?
(students have individual responses)

4. How do your feelings change when you think of shapes that are representational, round and curvy - such as, kidney shape, balloon shape, butterfly shape, teddybear shape?

5. What makes a work of art something highly successful? (the artist who is truthful with his feelings and can express them in the artwork is a success and creates successful art)

6. Let's name a few emotions or moods and associate shapes with them. Curvy shapes - fantasy, gaiety, fun, happiness, gladness tension, closeness, bounce, warmth; sloping or dripping curvy shapes can represent sadness; angular shapes - anger, madness, hatred, tension, turmoil

7. What types of scenes are created with straight lined shapes (cityscapes)

8. What types of scenes are created with rounded, curvy shapes (still-life, landscape, human portrait or interaction)

9. Why does the human form, unless interpreted by the artist take rounded shapes? (the human form is a very warm form. It is the epitome of the rounded or curvy form in art as well as in reality)

10. Let's create a non-representational drawing using one type of shape and let's find out how the drawing will make us feel. Open the disk drive door. Hold the diskette with the label end facing you. Insert the diskette with the label facing up into the disk drive and close the door. Now, turn on the monitor and turn on the computer.

11. Follow the directions on the screen using the keys on the keyboard and the palette or main menu will appear on the screen. For this lesson, we will use the full menu and any commands needed for completing the mood drawing chosen by the student.

12. Let's begin by placing the stylus on the Koala pad and place the cursor on the screen to the desired command. With the other hand press the top left button of the Koala pad. The screen will become a blank page ready for you to draw.

13. Now, press the stylus onto the pad and see the cursor appear on the blank screen. The cursor indicates where you will begin to create on the screen. Continue, using the Koala pad software program. Students are to work independently on their drawings.

14. The student is to explore the use of the computer to create a drawing. What must we, as feeling and thinking human beings do to react and feel something from a drawing made with abstract shapes? (We must read into the drawing and get a feeling intuitively or by associating the shapes with something that gives us a feeling - we must give something to the drawing)

15. What is the effect when shapes and their emotional connotations are used on a human portrait or a human figure? (Because the human portrait or the human figure is already emotion-packed, the application of using exaggerated shapes on the human form will enhance the emotion the artist wishes to convey)

Summary:

Shapes, in both their abstract and representational forms, create emotional meaning in a drawing. The viewer of the art might read feeling into the work by instinctively feeling something after seeing the art, or by associating feelings related to a representational shape. A successful artwork is one which can convey the artist's feeling.

Homework/Assignment:

Students decide on a mood that they wish to create using shapes in a drawing and execute the drawing using all the capabilities of the computer.

Extra:

Create a drawing of a human drama, which conveys strong emotional impact. The student could relate this drawing to a story or play with which he is familiar. The student must save the drawings on a formatted data disk. The student is to document the drawing by naming it with student's last name and class, and name drawings "mood". If possible, make a print-out of each drawing.

Note: For ERASERHEADS - There are various ways to erase. You can erase the whole screen by touching the pressure sensitive pad with your finger or the stylus to move the cursor to "ERASE" and follow the instructions by choosing the color you wish the screen to turn to. You can erase a single line by changing the color to the background color and (a) try to recreate the line to be erased with a thicker brush or (b) change the command to "BOX" and "black box" the shape out or (c) use a thick dot and dot the line out.

## TOPIC 19: Repeating a Shape

Performance Objectives: Students will be able to:

- examine the process of creating a design
- create an interesting design by varying the size and angle of the same shape
- practice changing sizes and angles of shapes using the Delta Draw software

Aim: Will repeating the same shape over and over again produce an interesting design?
What happens to the design when we change the size and angle of some of the shapes?

### Materials

- 16 computers, Apple II, IIe or IIc, IBM PC or PCjr
- 16 Delta Draw disks
- 16 data disks
- 4 or more black and white or color printers

### Motivation

On a demonstration computer, display a design consisting of repeated squares of the same size that are not overlapped.

-Does this design look interesting to you?
-Why or why not?
-What could we do to make it more interesting?

### Development

1. Insert Delta Draw disks, turn on computer, wait for Delta to appear
2. Have a student draw a square on the demonstration computer -Save it as a function and repeat it on the screen (review this procedure if necessary)
3. Change the size of the square by changing Delta size -(review this procedure if necessary)
4. Change the angle of the square by changing the angle of Delta before repeating the shape
5. On their own computers, the students will create and save a design of repeated squares with no overlaps
6. On their own computers they will then create and save a design of repeated squares with size and angle changes. Print both designs and compare
7. Examine the differences between the designs

## Summary

By repeating the same shape to create a design, one can isolate the elements of size and angle change to examine how they affect the design

## Assignment

Cut squares of different sizes out of colored paper and arrange them on a paper using what you learned from making your computer design.

## *TOPIC 20: How to Create a Composition*

Performance Objectives: Students will be able to:

- learn to use judgement when copying a design element (it's very easy to keep pressing the copy button and it's fun)
- create a design that doesn't have an overabundance of elements

Aim: How do we know when a design is finished?
How do we know when to stop?

Materials

- 16 computers, IBM PC
- 16 PC Design Koala pads, stylii and software disks
- 16 data disks
- one or more black and white or color printers

Motivation

Place the following quotation on the board: "Less is more"
- What does this mean?
- How would this apply to decorating a house, choosing clothes to wear, putting on makeup, etc?

Development

1. Plug in Koala pad, insert Koala disk, turn on computer
2. Demonstrate or review the design commands circle and frame.
3. Point out the cursor that remains after the circle or frame is made. This cursor can be moved anywhere on the screen to repeat the circle or frame.
4. Have students come up to the computer and repeat the shape as many times as they want.
5. The other students should watch and indicate when there is "too much" for what seems to them like a good design.
6. At their own computers the students should make and save two designs, one with "too much" and one with "just enough" shapes.
7. Print both designs and compare, examine the differences, Which do you prefer?
8. This same design may also be done with the copy or stamp commands.

## Summary

It's very easy and a lot of fun to repeat ad infinitum shapes with most graphic software. This is because a cursor of the previous shape remains that is waiting to be stamped out again. It's important for the students to learn to repeat using design awareness.

## Homework Assignment

Make a stamp that will repeat the same shape through stamping. Use it to make a design applying what you learned from making your computer design.

## TOPIC 21: How to Use Color in a Composition

Performance Objectives: Students will be able to:

- examine how a pattern which repeatedly juxtaposes two colors, creates the illusions of a new color
- "mix" new colors using the three primary colors
- create the illusion of a full colored picture using only three or four colors

Aim: Can we mix colors on the computer? How do we make a four color picture look like a full color picture?

### Materials

- 16 IBM PC computers
- 16 Art Studio disks
- 16 data disks

### Motivation

Show a four color picture made with Art Studio software that utilizes and mixes colors using patterns. Have the students look at it quickly.

- How many colors does this picture have?
- How many does it look like it has?

### Development

1. Insert Art Studio disks and turn on the computer.

2. On a demonstration computer examine the Art Studio patterns with the red, blue, yellow pallette on the screen.

3. Why do these patterns look like a new color?

4. How do we use red, yellow, and blue, in patterns to produce the look of orange, green, and purple?

5. At their own computers have the students use a palette of red, yellow, and blue, and patterns, to create a drawing or design that looks like it has orange, green and purple.

### Summary

We can create pictures that appear to have many colors even on a software that will let us use only four colors at a time and does not actually mix new colors.

### Homework Assignment

Make a pattern using two colors from orange, green, and purple. What new color do you get?

## *TOPIC 22: How to Create Patterns*

Performance Objectives: Students will be able to:

- examine what a pattern is
- see patterns in places you wouldn't ordinarily think of
- explore pattern-making in conventional and unconventional ways
- gain control of "cut and paste" command

Aim: Where in real life do we see patterns? Do we see patterns in places other than where artists put them? What makes a pattern a pattern?

Materials:

- 16 IBM PC computers
- 16 Art Studio disks
- 16 data disks

Motivation:

Have the students stand in a line. Hold up a piece of checkered or other patterned cloth.

a) what do the cloth and the line have in common?
b) are they both patterns?
c) what else in the room has or forms a pattern?
d) what is it that makes all these things patterns?

Development:

1. Insert software disks and turn on computers.

2. On a demonstration computer display a student's drawing that was saved.

3. Is there something in this drawing that if repeated could form a pattern?

4. Have the student whose drawing it is repeat an element in the drawing forming a pattern through the use of the "cut and paste" command.

5. Discuss how the drawing is transformed with the superimposed pattern.

6. Remind them that the original version of the drawing is still saved, so that they won't be afraid of ruining their work.

7. At their own computers have the students repeat the above procedure using their own drawings.

Summary:

1. Every day we see patterns that we don't ordinarily think of as patterns.
2. An awareness of this in creating our pictures and designs makes our work more interesting. The "cut and paste" command is good for exploring pattern-making in our work.

Homework Assignment:

Look for a group of objects in your house that form a pattern and draw them.

## TOPIC 23: How to Create Symmetry

Performance Objectives: Students will be able to:

- become aware of symmetry in real life
- compare symmetrical and non-symmetrical designs
- create symmetrical designs using "K" command in Delta Draw

Aim: What is symmetry?

Materials:

- 16 computers; Apple II, IIc, or IIe, IBM PC or PCjr
- 16 Delta Draw disks
- 16 data disks
- black and white or color printers

Motivation:

Something is symmetrical when it is built the same on both sides. Name some things you see in nature that are symmetrical. One of the things you named is people. Look carefully at the people in the room.

a) do they look symmetrical to you?
b) why not? (since we know they are indeed symmetrical)
c) how would a person have to sit or stand in order to appear symmetrical to you?
d) would this look natural?

Development:

1. Insert software disks and turn on computer

2. On a demonstration computer have a student make a symmetrical design with the K command. Save it.

3. Get out of K and have a student add one or two non-symmetrical elements to the design.

4. Compare the two designs and see which is more natural looking or less stiff (remind them of the person in the symmetical pose that you discussed).

5. At their own computers have the students repeat the above procedure.

6. Print both designs and compare.

## SUMMARY:

Symmetry occurs very often in nature. However, we usually aren't aligned with the object in such a way so as to see it as exactly symmetrical. Even if we are, the symmetrical object may move one part, such as bending an arm. This will take the exact symmetrical look away. That is why when we perceive something as exactly symmetrical, it often looks stiff and unnatural.

## Homework Assignment:

Choose an object at home that is symmetrical. Position yourself so you view the object symmetrically. Draw the object from that position. Change your position so you view the object unsymmetrically. Draw the object from that angle. Which drawing do you like better? Why?

## *TOPIC 24: Designing Shapes That Relate*

Performance Objectives: Students will be able to:

- explore how shapes relate to each other
- make a good design where the shapes relate
- learn to create a picture in stages on the computer
- practice the line and fill commands on Koala software

Aim: Can shapes relate to each other?

Materials:

- 16 IBM PC or IBM XT computers
- 16 Koala Ware PC Design pads, stylii and disks
- 16 data disks

Motivation:

Can shapes hug, dance, fight, play, and relate in the ways that people do?

Development:

1. Insert Koala pads and software disks and turn on computers.
2. On a demonstration computer draw two stick figures relating to each other in some obvious way.
3. Make an outline around each of the stick figures using either a freehand or angle line. Have the outline conform closely to the shape of the stick figure. Save this to data disk.
4. Erase the stick figures inside the outlines and fill the shapes that are left with colors. Save.
5. Does it look like these two shapes are relating?
6. At their own computers have the students repeat the above procedure but think of their own way to have the figures relate.
7. Have the students make another design skipping the stick figure stage.
8. Each shape must relate to another shape. The design should have three or more shapes. Save designs.

Summary:

Giving human qualities to shapes will help the students learn to create designs which are unified with the parts relating to the whole.

**Homework Assignment**:

Can two inanimate objects in your house relate in some way? Draw them that way.

## *TOPIC 25: Designing Curves*

Performance Objectives: Students will be able to:

- understand how the computer segments lines in order to have them curve or run diagonally.
- understand how the grid and pixel of the computer prevents us from drawing a line which truly curves
- relate the above two ideas to the grid of stitchery mesh and the stitched lines
- experience how a high technology can assist us with a simpler technological process

Aim: What do computer drawing and stitchery have in common?
How can computer drawing help us to learn stitchery?

Materials:

- 16 Koala PC Design software disks
- 16 data disks, 16 Koala pads and stylii,
- 16 IBM PC computers, black and white or color printers

Motivation:

Display the following on a demonstration computer screen: horizontal, vertical and angle lines, circles and other curved lines. Also present a stitchery mesh with the same configurations done with stitches.

a) what do the computer lines have in common with the stitched lines?
b) why are they both segmented?
c) what does the computer screen have in common with the mesh?

Development:

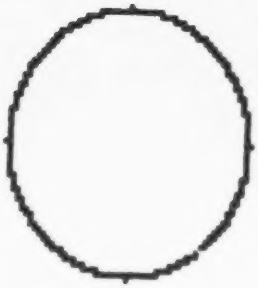
1. Explain pixel and grid system of computer graphics (demonstrate how the pixel can move only up, down, or sideways and always in multiples of the same minimal unit.

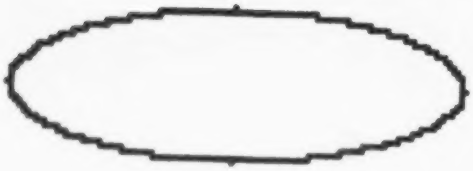
2. Compare this to the unit of the hole in the stitchery mesh.

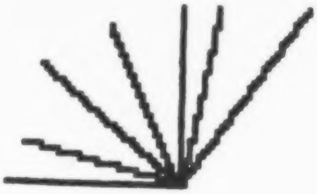
3. At their own computers have the students draw a design with angles, curves, circles, etc.

4. Have them print their designs.

5. After they know the basic stitch, have them try to figure out on their own how to stitch the line configurations on their prints by paying attention to the line segmenting.







Summary:

The relationship between stitchery and computer graphics is based on their both being stuctured by a grid. The grid gives a similar "look" to both. Computer graphics is a good tool for teaching stitchery.

Homework Assignment:

With pencil and graph paper draw three circles each segmented in a different way.

## *TOPIC 26: Moving Your Drawings Around*

Performance Objectives: Students will be able to:

- edit or change a drawing by changing its position on the screen
- create several variations from one basic drawing

Aim: In what ways does your drawing change when it is moved to different positions on the screen?

Materials:

- Delta Draw software
- data disk
- compatible computer and printer

Motivation:

Imagine that you are a camera operator for a new Hollywood movie, and you had to get the best possible shot of the hero, who is just about to escape from the clutches of the Dragon Space Invader. How would you get the best shot?

Development:

1. Have the students gather around a demonstration computer.

2. Ask for someone to volunteer one of her saved drawings to be "scrolled" or moved around on the screen.

3. Slowly scroll the drawing in different directions asking the students to tell you when to stop.

4. Discuss what effect the scrolling had on the:
   a) idea of the picture
   b) look of the picture
   c) action of the picture
   d) composition of the picture, and any other aspects that come to mind

5. Discuss whether one of the new positions makes you want to either add to or take away anything from the picture.

6. At their own computers, have the students select one of their saved drawings, and scroll it around. They should save to the data disk any of the new positions they like and make any other changes they want.

7. Print the original and new variations.

8. Have a critique, comparing the old and new drawings.

Summary:

1. Scrolling a drawing on the screen teaches innumerable things about picture-making.
2. The instant variations that are continuously produced cause a flow of new ideas and evaluations relating to the picture.
3. Ideas of picture dynamics, content, and composition are easily worked with through this dynamic process.

Homework Assignment:

Create a way to scroll your drawings without the use of a computer.

## *TOPIC 27: Merging Visual Images*

Performance Objectives: Students will be able to:

- create a picture where two opposite ideas merge into one visual statement
- combine two picture screens into one using the "swap" tool

Aim: How could two pictures, each expressing an idea opposite to the other, be combined into one?

Materials:

- Koala painter software and graphics tablet
- data disk
- IBM PC Jr. computer and printer

Motivation:

1. Did you ever wonder what winter and summer would look like if they were happening at the same time?

2. How would someone look if they were happy and sad at the same time?

Development:

1. Have the students name ideas that are opposites and list them on the board, example: dry-wet, inside-outside, right side up-up side down, day-night.

2. Discuss briefly how each idea looks different from its opposite.

3. Have the students gather around a demonstration computer.

4. Demonstrate how to use the "swap" tool that combines two picture screens into one.

5. At their own computers, have the students create and save on data disks the two drawings expressing opposite ideas.

6. Have them combine both drawings using "swap". Save the combined picture.

7. Print out all three pictures.

Summary:

1. The "swap" tool is a very exciting one because it offers the students the possibility of creating unusual combinations of picture elements that they wouldn't necessary think of without this tool.

2. The technical skill of combining two screens is an important one because of its value in picture editing.

3. "Swap" should be taught after most of the other software tools have been learned.

**Homework Assignment:**

How could you combine two drawings into one without the use of a computer?

## TOPIC 28: Shape and Form

Performance Objectives: Students will be able to:

- identify and use simple and complex forms
- identify and distinguish biomorphic forms
- identify and distinguish geometric forms
- incorporate these forms into a design of their choice

Aim: To identify and use two major categories of shape/form in a design.

Materials:

16 IBM computers for 32 students
PC Paintbrush software

Motivation:

Shapes and forms affect our lives every day; we find shapes and forms everywhere we look. Some shapes are definitely man-made while others are not. Let's look at the objects around us and place the shapes into two categories. Can someone tell us what they think the two categories for shapes might be?

Development:

1. What definition would you give to describe a form? (segment of space with distinguishable boundaries)

2. Two-dimensional forms defined by closed lines are called what? (shape)

3. Form is the name given to a shape that is found in a three-dimensional object. What might we need to sense these forms more clearly? (light and touch)

4. Shapes convey meanings and evoke a sense of experience. As artists we can give shapes new meanings by the way we use them in a composition.

5. The technical names given to shapes fall into two categories:

   a. GEOMETRIC forms that are pointed, curved, or mathematical in nature. (These are shapes created by humans and are usually inorganic.)
   b. BIOMORPHIC forms are rounded, ovoid or amorphous. They generally resemble shapes found in nature; they are organic.

6. COMPUTER CLASSWORK: Part I - make several shapes that are biomorphic and then make several that are geometric. These may be used together or separately on the screen. Work with these until you feel comfortable with them.

   Part II - deliberately distort or juxtapose familiar shapes in unfamiliar ways. Look at Picasso's GUERNICA, as an example. Strive to create a personal statement or to evoke a particular emotion using these shapes.

## Summary:

When working with shapes (forms) what is the role of the artist? How does the artist use forms to create a symbolic expression or communicate a feeling? How would you describe biomorphic? Geometric?

## Application:

When artists work on designs, they attempt to successfully integrate several aspects of design - form is only one of these. We have worked with and discussed several of these elements and principles, what are they? Many times modern artists say they are trying to release forms and meanings from the material at hand. They want to exercise their freedom of choice. What do you think the artist means when he/she says these things? They have the ability to select shapes or forms that work well with the material, to work using non-representational forms to convey ideas. Some traditional materials for the artist would include: marble, wood, wax, and wire. Some untraditional materials may include ice, fabric and plastic. What problems might the artist encounter when working with these substances?

## Assignment:

(Prepare before class several plain index cards enough for every student plus some extras, with a one-word emotion written on each: for example, a card may say ANGER).

Every student will select a card without seeing the word written on it beforehand. Tell students to carefully record their word and not to reveal it to anyone else in the class. Place all finished works up around the room in random order, try to distinguish what feeling or mood the artist was showing, how well did their choice of color material and shape reflect the mood.

## TOPIC 29: Basic Elements of Design (Reinforcement)

Performance Objectives: Students will be able to:

- use the computer effectively
- draw and distinguish non-objective art vs. representational art.
- use lines, shapes, colors, space and texture together to create a design.

Aim: To identify and use the elements of design in a non-objective drawing.

Materials:

16 IBM computers for 32 students
PC Paintbrush software

Motivation:

In the classroom before the computer experience, students should have viewed slides or stills of various non-representational artists' work. Selected artist may include: Henri Matisse, Piet Mondrian, S. Tauber-Arp and others.

Development:

Refer to page 6 "Introductory Art in the High School" guide

- What elements of design have we been working with as individual units up until now?
- Refer to slides from classroom experience and ask...

1. Reviewing the different types of art we have looked at, what in particular appealed to you?
2. Large blocks of color, no real shapes, looks like graffiti, use of lines, shapes etc.
3. Can you categorize or name one type of art we saw?
4. Minimal, Op-Art, Hard edge, etc.
5. Select one style of art and tell us what the artist was trying to achieve and how he/she did that.
6. The artist was trying to create an illusion by tricking the viewer's eye, by using dots of different sizes we see things that really aren't there. (Op-Art)

Classroom Experience:

Using the computer, draw several ideas of non-objective art. Select the one you like the best and make a full screen representation of that idea. Use all the elements of design we have covered in class (if your style permits).

Summary:

- What have you discovered about using lines in your drawing? (they are the backbone of all drawing experiences)
- How do you change colors? (move cursor to the active color box and press F10, then move to new color repeat)
- What will you do to add or change a texture pattern? (see answer above)
- What role does spacing play in your design? (space can set the tone by giving an airy or cluttered appearance to the work)

Application:

- When artists begin to work on a drawing, sculpture or painting they are very aware of the elements of design and how they will apply to the work in progress.
- When you were working on your design did you find yourself becoming more aware of the elements of design? How did it affect your work?

Assignment:

Using various collage materials make a non-objective collage design. Various collage materials may include: colored paper, yarn, string, fabrics. scraps of beads, lace, sewing trims, pieces of metal foil, old papers, labels or any material that will help carry your theme.

## TOPIC 30: Space -- Visual Effects

Performance Objectives: Students will be able to:

- effectively plan the use of space
- devise new ways of creating the illusion of space
- explore the use of physical space

Aim: Explore the visual effects of items and their size within a given space.

Materials:

16 IBM computers for 32 students
PC Paintbrush software
collection of small items; paperclips, tacks etc.

Motivation:

Show students several slides and then using the questions below conduct class discussion.

| | |
|---|---|
| Picasso | Les Demoiselles d'Avignon |
| Pollack | Number 1 (1948) |
| deVaserely | Op Art |
| Vermeer | Painter in his Studio |
| Cezanne | Oranges |
| de Chirico | the Nostalgia of the Infinite |

- How does de Chirico create an illusion of boundlessness?
- In Cezanne's painting "Oranges" how does he acheive a feeling of three-dimensional space?
- In Op Art, how does the use of figure and ground relationship make a statement?

To show movement and illusion of movement in space show the following slides:

| | |
|---|---|
| Giacomo Balla | Speeding Automobile |
| | Dog on a Leash |
| Calder | Lobster Trap and Fish Tail |
| | Whale |
| Duchamp | Nude Descending a Staricase |
| Tinguely | Homage to New York |

Development:

The nature and our conception of space plays an important role in our attitudes and behaviors. Some extreme examples of how people are affected can be understood if you think about people who are claustrophobic or agoraphobic.

What is the difference between being in a small cramped space with many people or with the same group in a large banquet hall? How do you feel? Why?

Often we do not notice how simple objects use our space. How is space used by the following items:

branches of trees
spider webs
a dancer doing ballet
dancer doing jazz or similar fast movements
telephone lines and poles

Computer Classwork:

Space can be altered by perception and size. Using the items brought to class, draw one or several of these objects larger or smaller than actual size. Using the SHRINK & GROW on the computer, alter several pieces or entire units to form spacial relations on the screen. Does your finished product make a statement? Create a mood? Give the viewer a sense of proportion?

Summary:

. How does the physical size of a space effect us physically?
. How can the artist change a given space visually?
In a two-dimensional design, how does the artist expand space beyond the edges of the page? How can he/she limit space?

Application:

We often want to grasp the attention of the public in some graphic, visual way. With your new knowledge of space and its effects on people, create a statement that would attract attention. Use graphic imagery and create a poster or album cover, etc.
. What elements do you think would be most appropriate to these designs?

Assignment:

In class we will create blow-up sculptures and see their effect on others. Begin by going home and taking precise measurements of a common object. Record these very carefully in 1/8" or any measurement that works for your object. Then plot these on a graph. We will expand these so that 1/8" is equal to 1 foot.
Then using these measurements and the graph, using cardboard and glue we will make blow-up versions of these objects.
(For example: students may create giant nail clippers, or scissors)

## *TOPIC 31: Balance*

Performance Objectives: Students will be able to:

- discuss and indentify different forms of balance
- define the three types of balance
- create designs that show different types of balance

Aim: What are some of the ways of showing balance in a design?

Materials:

16 IBM computers for 32 students
PC Paintbrush software

Motivation:

There are certain things one must learn to "see" and "feel" in art. Balance in a composition is one of these things. Look at:

Alexander Calder - Still Fish
Two White Dots in the Air
Hextopus

Edgar Degas - Girl Dancer of 14
Dancer on Stage
Frieze of Dancers

Julio Gonzalez - Angel
Women Combing her Hair
Personage

Auguste Rodin - Etude
Le Jongleur

Development:

refer to page 6, "Introductory Art in the High School"

1. How did the artist achieve a feeling of balance in the works we just looked at?
2. What would you call it if the work was divided evenly with the same number and size of objects on each side? (symmetry)
3. What would it be called if there was one large object to one side with several smaller objects on the other? (asymmetrical)
4. Have you ever noticed a high pile of objects teetering precariously but not falling? What would we call that type of balance? (radical)

5. Think of a simple object that shows both symmetrical and asymmetrical balance (playground see-saw - if two people of equal weight get on the see-saw will be symetrically balanced equal on each side: if one heavier person was to get on one side and several lighter people got on the other but the combined total weight of the lighter people equaled the heavier person we would have an example of asymmetrical balance)

Using the computer draw shapes and place them in various locations until you achieve a sense of balance. Move your shapes around until it feels right to you. Then identify what type of balance you have created.

Summary

1. How many types of balance are there?

2 How would you define radical balance?

3. When there are identical or mirror images on a page, what would we call it?

Application:

When working on a design what elements and/or principles of design are we thinking about? Does our first image have to become our final design? Explain what is meant by the artist being able to "Feel" when something works in a design.

Assignment:

Make several small geometric shapes out of colored paper. These should be three-dimensional and patterns are available to assist you in constructing them. Take several of these shapes and use them to create sculptural assemblages that will demonstrate your understanding of balance and the various types of balance discussed.

## *TOPIC 32: Rhythm*

Performance Objective: Students will be able to:

- identify the properties of rhythm
- discuss its usefulness in overall designs
- create a rhythmic pattern on the computer

Aim: To identify and design a rhythmic pattern.

Materials:

16 IBM computers for 32 students
PC Paintbrush software

Motivation:

Rhythm is one of several components that make up the principles of design, the other principles include balance, harmony, emphasis, variety and unity. The combination of these principles along with the basic elements of design is what helps the artist/student create meaningful works of art.
Review the following (or similar) visuals for rhythm:

Jean Arp - Leaves and Navels
- Anchors
- Design or Navel

Max Brill - Rhythm in Space
James Brook - Bixby
Henry Moore - Reclining Figure 1952
- Two Forms
- King and Queen
- Two Woman Seated
- Standing Figure

Jose de Rivera - Construction #47
- Construction #48

Development:

refer to p.6 "Introductory Art in the High School"

1. Looking at these slides, there are certain similarities and differences. Will someone describe how the artist has shown rhythm in..let's use Henry Moore's "Two Figures"?
2. What other activities come to mind when you think of Rhythm? Music, gymnastics etc.

3. Using music as an example we can say that the artist follows a similar course or plan as the musician does when writing a new piece of music.

4. First you must have an idea

5. Put it down on paper

6. develop some HARMONY in the work
7. add some RHYTHMIC moves

8. interject spots of EMPHASIS

9. change the tempo for VARIETY

10. BALANCE the composition and UNIFY the entire piece to create something that is pleasing to the viewer or listener.

. How many ways can we create rhythm in a design? Repetition of shape, color, texture, direction and width of lines.

. What basic elements of design, do you feel, are important to show rhythm?

Using the computer think RHYTHM; let your design flow onto the screen. You may use one or several tools and textures. Review your design. Does it show Rhythm?

Summary:

. What have we discovered about patterns and rhythm?
. What tools or textures did you find most helpful?
. What can we do to enhance these patterns and keep the rhythmic movement in the design?

Think of some things found in nature that show examples of rhythmic patterns? Do zebra stripes, stratified rocks and marble come to mind?

Application:

Discussion on rhythm and rhythmic flow using print-outs of students' work as compared to slides previewed before computer work period.

Assignment:

Create marblized patterns on paper. These may be used as part of a collage or as wrapping paper. Float oil-based paint that has been thinned with solvent on a shallow pan of water. Take several sheets of plain paper, white or colored and pass them through the water, shifting the paper and combing through the paint to create various marblizing effects on the paper. How do these compare to the designs created on the computer?

## *TOPIC 33: Positive and Negative Space*

Performance Objectives: Students will be able to:

. tell the difference between positive and negative space
. identify positive and negative space in their drawings
. use and change textures on the computer

Aim: To Distinguish and Understand the Difference Between Positive and Negative Space.

Materials

. 16 IBM computer for 32 students
. PC paintbrush software

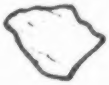
Development

Refer to page 6 - "Intrtoductory Art in the High School" curriculum guide

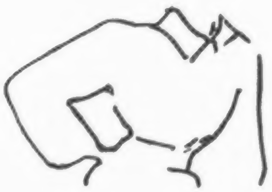
1. Looking at this visual, tell me what you see? (show visual example) (two faces profile, or a fancy cup of some sort)

2. Why do you think #1 saw a cup and #2 saw two faces in profile? (There is no difference in the background. They have the same value and weight. The artist didn't use tones to tell you what was the background)

3. Teacher make an illustration on the board similar to this or anything that appeals to you.



4. Can someone tell me what this is? (a funny shape it's nothing)



5. Teacher draws around your shape so it becomes a negative space

6. Can someone tell me what it is now? (you made a figure, that was the space near the arm)

7. Will someone tell me what we call that space? (negative space, space that is not part of the drawing, background space.

8. If we call this negative space, what would we call the rest of the picture?

Classroom Experience:

Today on the computer we will draw various shapes and decide which ones are positive and which ones are negative.

Application:

We have been working with one element of design SPACE. When we add other elements of design to it we will be well on the way to creating meaningful works of art. Knowledge of positive and negative space is important because careful manipulation of these areas can create powerful statements in our work and make the difference between clarity and obscurity.

During this and other computer lessons we have discussed the use of the computer, Tell us some of the things you can do on the computer and what keys or functions you do to execute it.

Summary:

(select particular students work as example)

1. What area did you begin with? Why?
2. Shape came naturally from the tool selected from the toolbox.
3. How did (or will) you add variety to your work?
4. Change the width of lines, change colors, or add texture patterns.

   - What have you found out about the use of space in creating a design or drawing?

Assignment

Collect at least two samples of art from magazines or books, indicate the space as positive or negative by cutting out tracings of that space. Using these tracings hold them up to the original drawing and see what effect the space has on the effect of the drawing.

1. Select and cut out photo from magazine.

2. Trace outline of main figure or area.

3. Trace the outline of the background area.

4. Transfer these tracings to dark colored paper.

5. Cut these out and use them as covers for each area.

6. Make some quick notes on the effect of this study, bring your notes and picture with covers to class.

# DRAWING

## *TOPIC 34: Exploring Continuous and Contour Line Drawing*

Performance Objectives: The students will be able to:

- explore line, an element of design, by using it as a tool for representational creativity (contour) and creative expression (continuous)
- create, through computer generated graphics, two drawings of a complex form. One of the drawings will stress a continuous flowing line which will travel through numerous levels of planes, the other will trace the exact edge of a form and capture every possible turn and movement of the form within space, stressing all overlapping planes
- print out a hard copy of both exploratory computer drawings and analyze the differences in artistic approach to the subject
- demonstrate through a clear choice, the proper approach to select for a "style" of drawing, depending upon the creative project at hand.

Aim: The student will create and print out two computer generated graphic drawings of a complex form of their choice. One will stress a continuous line, the other will stress a contour line.

Materials:

- IBM PC
- adequate graphics software such as: Delta Draw, P.C. Paintbrush, Auto Cad, etc.
- device for controlling the use of selected software (keyboard, mouse, digitizing tablet or Koala pad, light pen.)
- disk drive and floppy disk for storage of drawings
- video monitor
- printer
- student selection of a table top or hand held form to observe for the two computer art pieces closer to the approach of the traditional artist

Motivation:

1. Show examples of continuous or stylized line drawings of Picasso, Modigliani, various illustrators of record jackets, books, magazines, newspapers (Hershfeld) etc.

2. Show examples of fine representational contour line drawings of Ingres, Escher, Durer, Dali, past student work, etc.

Development:

1. What are the differences between the continuous or stylized line design and the contour line design?

2. How have some of these artists utilized these differences to their advantage?

3. Is one of these styles preferable to you? Why?

4. For what purpose would you select each type of line drawing?

5. What aspects of each type of line design would you try to observe more accurately within the subject matter?

6. Procedure:

   a) Discuss procedures for drawing a continuous stylized flowing line which will creatively express the feeling of the selected subject matter.
   b) Discuss procedures for drawing a spacial representative contour line of the selected subject matter.
      1. Contour line definition - the exact edge of a form. The point at which an object turns beyond itself in space.
      2. Implant your eye on the edge of the form of the subject, and place your drawing instrument on the Koala pad. Allow your drawing instrument to travel upon the Koala pad as your eye travels over the edge of the form until the contour comes to an end. It will end when another contour overlaps it. At this point, realign your drawing instrument and your eye upon the subject and continue the process slowly and accurately.
   c) The student will select the subject matter.
   d) Demonstration:
      1. Teacher boots up selected software.
      2. Demonstrate the procedure to access commands from the software menu.
      3. Demonstrate the use of the Koala pad, mouse, or keyboard controls.
      4. Demonstrate "save" and retrieve functions.
      5. Demonstrate printing when needed.
   e) The student will begin continuous line design.
   f) The student will save the continuous line design for future use.
   g) The student will retrieve and edit the drawing.
   h) The student will save and print out the final solution to the continuous line drawing.
   i) The student will follow the same procedures (e to h) for the contour line drawing.

7. The student will compare the two computer generated graphic printouts for style, feeling, and structure.

8. The projected time for creating, editing, and printing the two types of computer drawings will be approximately 1 week.

Summary:

The student will use computer generated graphics to enhance the concepts of basic design (line design) which is discussed on page 6 of the "Introductory Art in the High Schools" curriculum guide of the Board of Education of the City of New York. The student will create a continuous stylized line design which will exhibit creative expression as well as a contour line design which will exhibit a more accurate representational creativity.

Assignment:

1. Bring into class a complex table top or hand held form to use as subject matter for class observation.

2. Draw a continuous line drawing of the selected subject matter at home, and bring it to class.

3. Draw a contour line drawing of the selected subject matter and bring it to class.

4. Make a comparison of the two styles of drawings and list their major differences.

5. Why would you select one style over another?

6. List a series of approximately 10 art items or projects and make a determination as to what style of line design would be most compatible.

## TOPIC 35: Line and Value in Deep Space

Performance Objectives: Students will be able to:

- use line and value to depict deep space
- create a feeling of mass to drawn objects
- control the use of scale to depict space
- use one-point perspective as a tool for correct scale reduction of objects which are parallel or perpendicular to the picture plane.
- use two-point perspective as a tool for correct scale reduction of objects which are at an angle to the picture plane other than 90 degrees
- The student will be conscious of and stress any forms which overlap in space.

Aim:

1. The student will create an original design which will attempt to depict deep space using the elements of line and value.
2. Concepts such as perspective, contrast, and overlaping of forms should be utilized to help create the illusion of deep space.

Materials:

- IBM PC
- disk drive and floppy diskette
- video monitor
- printer
- device for controlling the use of selected software (keyboard, mouse,
- digitizing tablet* or Koala pad, light pen.)

* The digitizing tablet or Koala pad is preferrable because it tends to draw the technical aspects of computer generated art closer to the approach of the traditional artist. One can draw with the tablet, allowing it to transfer all the correct data to the central processing unit in the machine language which it can understand. This allows the artist to use the computer as an extension of media and tool for organization and creative expression.

- Adequate graphics software such as Delta Draw, P.C. Paintbrush, Autocad, etc.
- Sketching materials (pad, pencil, ruler)

Motivation:

1. Show reproductions of various paintings from the Renaissance period.

2. Show selected reproductions of Andrew Wyeth.

3. Show selected examples of photographic landscapes and cityscapes.

4. Show selected reproductions of Edward Hopper.

Development:

1. What artistic elements or principles does the portrayal of deep space exhibit?

2. How can you as the artist show that one object is placed in front of another?

3. How can you as the artist gradually step back space into the distance?

4. How does contrast effect an object in space?

5. How does distance effect the scale of objects?

6. Procedure:
    1. The student will make a determination whether his design project will be representational or abstract.
    2. If the design will be representational, the student will select a subject and create a preliminary sketch from direct observation. If the student has decided that the design will be abstract in nature, the student will create a preliminary sketch of shapes and forms which will exhibit deep space. These sketches will be used with the digitizing tablet or Koala pad to transfer graphic information into computer language.
    3. Demonstration:
        1. boot up software
        2. using the preliminary sketch within the Koala pad
        3. accessing software menu commands
        4. demonstrate save and retrieve functions
        5. demonstrate printout procedures when necessary
    4. Discuss procedures for finding a point of view or "vanishing point" for one and two point perspective.
        1. Find the eye level and center of vision. The intersection of these two imaginary lines will give the viewer a point of view or point at which lines which travel back in space seem to converge upon.
        2. In two point perspective, there will be two vanishing points located on the eye level usually to the left and right of the center of vision.
    5. Discuss other ways in which space may be rendered more clearly.
        1. Overlap all forms which go back in space.
        2. Use low contrast to recede.
        3. Use high contrast to advance.
    6. Students boot up selected software.
    7. Begin transfer of drawing using the Koala pad.
    8. Save and print hard copy of drawing in progress.
    9. Sketch into hard copy for corrections, changes, and additions.
    10. Retrieve the computer drawing in progress from memory and edit as indicated.
    11. Continue this process until the design problem is complete.
    12. Save and print out a hard copy of the completed solution to the projected deep space design problem

7. The projected time for creating, editing, and printing the final version of this projected design problem will be approximately 6 to 8 class periods.

Summary:

The student will use computer generated graphics to enhance the concepts of basic design and drawing which are discussed on pages 6, 9, and 19 of the "Introductory Art in the High School" curriculum guide of the Board of Education of the City of New York. The student will create, using the elements of line and value, a basic design which may be abstract or representational and must exhibit the qualities of deep space.

Assignment:

1. Determine the subject and style of your potential solution to the projected problem, and create a preliminary sketch which will be used in conjunction with the Koala pad.

2. Take a photograph from a magazine or newspaper, place it into your loose leaf binder, and list the items which you see within it which help to describe its space.

3. How have the works of the artists which you have seen utilized design elements and concepts to portray space?

4. Draw into all preliminary computer printouts any additions and alterations which you intend to make to your computer generated design. This should be done on a daily basis.

## TOPIC 36: One-Point or Parallel Perspective

Performance Objectives: Students will be able to:

- understand the principles of one-point perspective
- learn the vocabulary used
- recognize pictures viewed in one-point perspective
- draw rectangular blocks and cubes in one-point perspective

Aim: To Apply the Principles of One-Point Perspective to Architectural and Interior Design Drawings, Using the IBM PC With Appropriate Software.

### Materials

Hardware: one IBM PC for every two students
Software: "Delta Draw" by Spinnaker; "IBM Drawing Assistant" by IBM PC software; or any other draw program with same capabilities
Paper, felt-tip pen, thin plastic and tape, or Saran Wrap

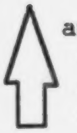
### Motivation

- Photographs of street scenes and railroad tracks are displayed in front of the classroom. The students are asked to study them and then list examples of the optical illusions in each picture. These should include; the apparent converging of train tracks, street lamps appearing shorter in the distance, etc.
- The discussion is then summarized in a definition of Perspective as: "the art of representing solid forms in depth on a flat surface, as they appear to the eye." (examples of the use of Perspective in the art of the past may also be displayed and discussed. These would include Greco-Roman wall paintings excavated in Pompeii and Italian Renaissance architectural drawings).
- The terms underlined here are to be included in the student's vocabulary list.

### Development

1. The teacher faces the class, and traces in the air the lines where side walls and ceiling meet, demonstrating how these two parallel and horizontal lines appear to converge downward to meet at a point on a level with the teacher's eyes. "Eye Level" is then defined as the distance up from the ground to the observer's eyes. It is always a horizontal line, synonomous with "Horizon".
2. Students are asked to compare the horizontal lines on the front wall facing them, with the horizontal lines on the side walls. They should respond that while these lines on the front wall remain horizontal, those on the side walls seem to converge. The teacher then explains that the illusion of parallel lines appearing to converge, occurs only on receding surfaces. The term receding is then defined as follows: "lines and surfaces which recede, extend into space away from the observer, so that

U - a "U" turns at 180 degrees



| | | |
|---|---|---|
| and | D - draws line 5 units long | CTRL D - draws line 1 unit |
| " | M - moves arrow 5 units | CTRL M - moves arrow 1 unit |
| " | L - left turn at 15 degrees | CTRL L - turns arrow left 1 degree |
| " | R - right turn at 15 degrees | CTRL R - turns arrow right 1 degree |

E - erase backwards from last move
CTRL E - clears screen
CTRL W - changes line width
ALT and any letter or number draws letter or number on screen
CTRL Break - exit from program
ESC - escape
CTRL S - saves pictures and gives access to picture files

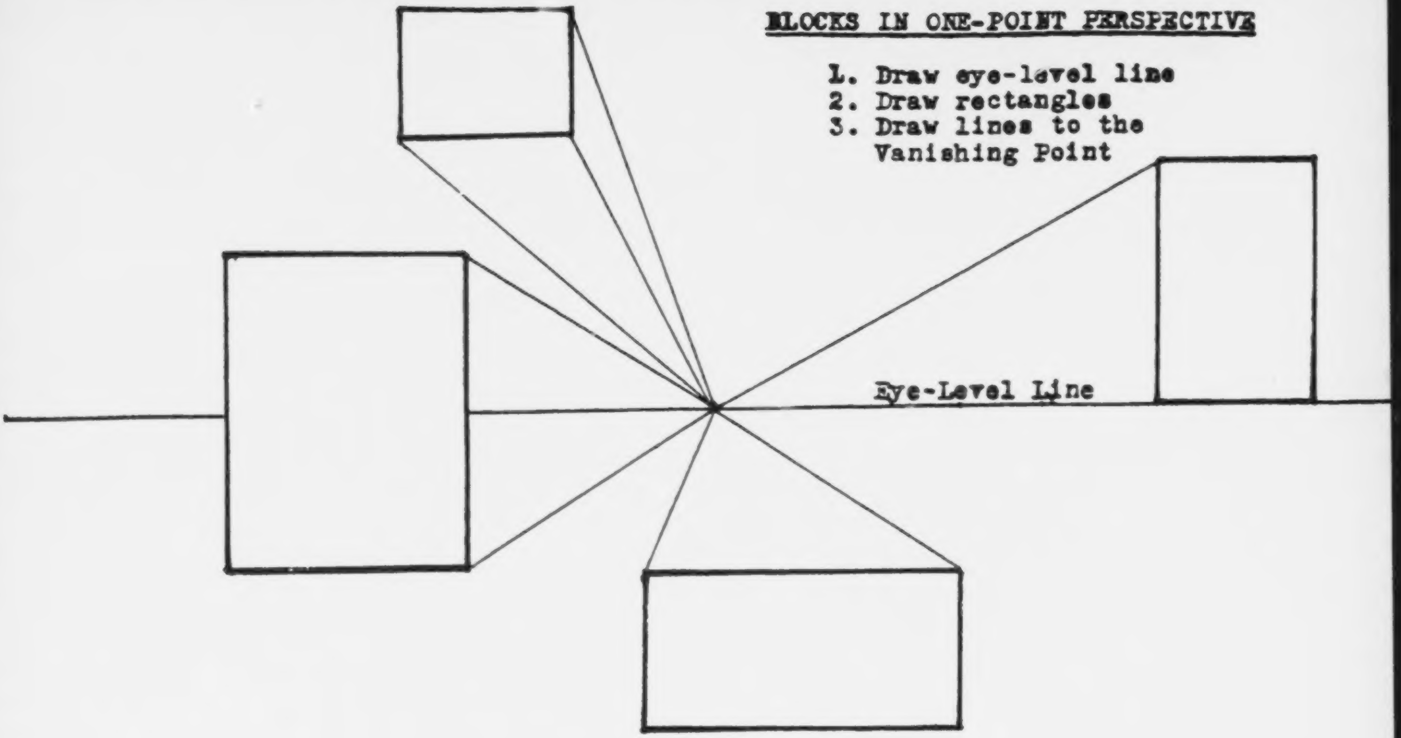
9. Color

   C - color of arrow (white, magenta, light blue)
   CTRL C - changes intensity or brightness of colors
   CTRL B - draws in background color
   CTRL F - fill closed area with arrow color
   B - changes background color
   Y - adds or deletes yellow from colors

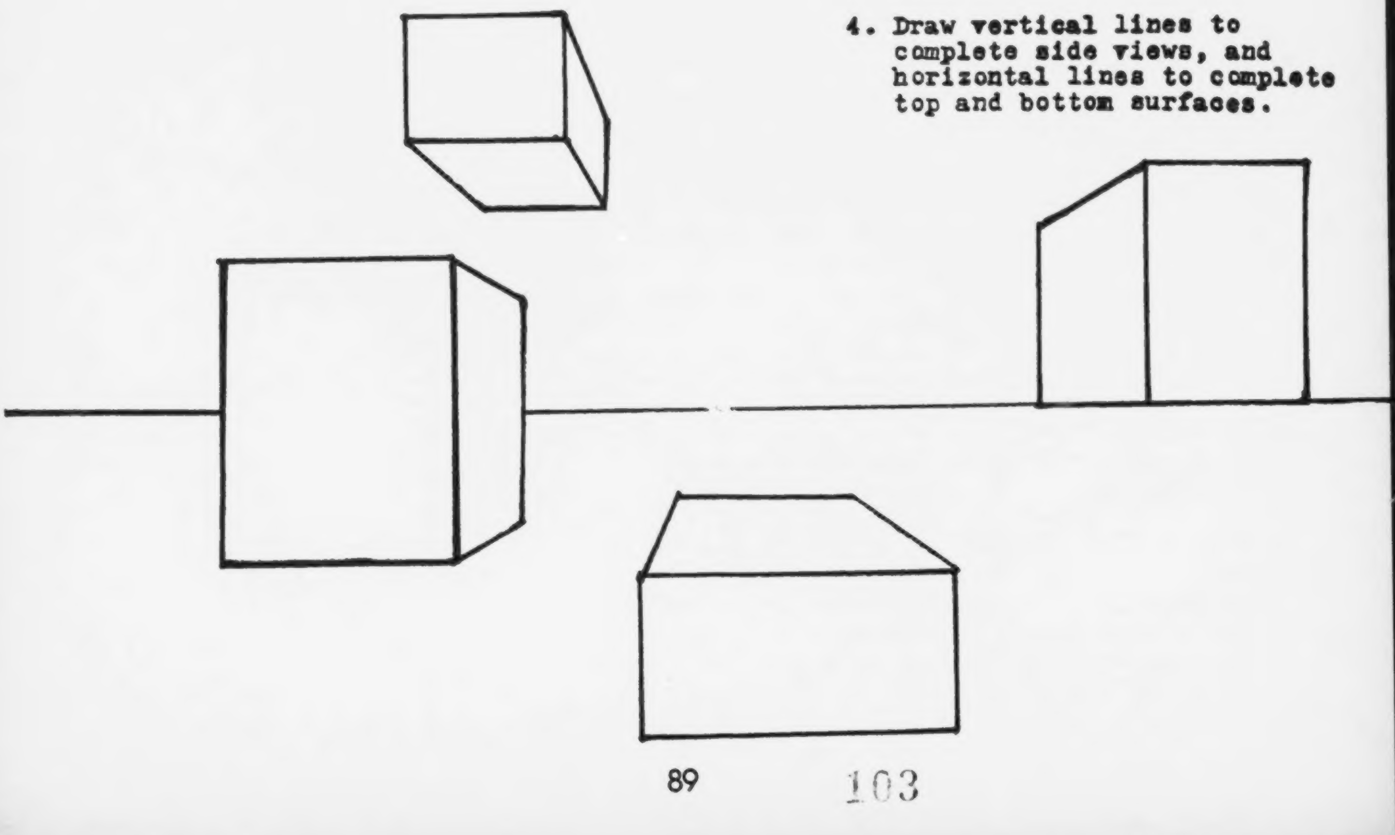
10. Drawings may be saved on a file disk, but cannot be accessed unless the Delta Draw program disk is loaded into the machine.

## BLOCKS IN ONE-POINT PERSPECTIVE

1. Draw eye-level line
2. Draw rectangles
3. Draw lines to the Vanishing Point



4. Draw vertical lines to complete side views, and horizontal lines to complete top and bottom surfaces.



# TOPIC 37: How to Draw a Newspaper Illustration

Sub Topic: Drawing a Newspaper Illustration in Contour Line using the IBM PC Computer and the Koala Pad Program.

Performance Objectives: Students will be able to:

- create a contour line newspaper ilustration that relates to a stated news format using, line, shapes and rule lines
- use the IBM PC computer and Koala Pad program to draw the illustration
- relate the limitations of a newspaper illustration to the design capabilities of the Koala pad program
- Koala pad drawing program:
  - draws straight lines
  - draws free hand lines in a varity of widths
  - draws geometric shapes
  - can save drawings and make corrections
  - requires limited detail
  - reduces in-line cut or half-tone
  - can use programmed type
  - can use programmed tale lines

Aim: How can you draw a contour line newspaper illustration using the IBM computer and the Koala Pad program?

Materials:

- IBM PC Computer
- Koala pad program/Koala pad/Stylus
- Data disk

Apperceptive Base:

Students receive the following homework assignment in preparation for this lesson.

1. Clip out a newspaper/editorial/story/advertisement and draw an illustration that relates to the theme of the article.
2. Indicate your ability to draw images in contour lines and shapes that could be printed in a newspaper using the Koala drawing program.

Motivation:

How can an illustration help the reader of a newspaper?

Development:

1. Review homework assignment, discuss the relationship of illustration to the theme of the article.

2. Identify how the illustrations can use the Koala pad program to draw images

3. Discuss the homework composition

   .use of contour lines
   .use of shapes
   .balance and rhythm in the composition

4. Teacher demonstration: boot up Koala drawing program in A Drive, attach the Koala pad into the game port.

5. Bring the Koala ware up on the monitor and demonstrate how to use the various drawing modules to create a contour line image on the monitor suitable for a news page.

Illustration: Give class studio assigment

Applications:

1. Studio assigment on the basis of your newspaper illustration homework assignment and the class review. Draw a newspaper illustration in contour line using the Koala pad program, Size: 5x7

2. The students should be urged to save their drawings frequently on their data disks

3. Class contributes to work saving their completed contour line drawing on the data disk in the B drive.

Medial Summary:

1. Review two or three student works in terms of the stated performance objectives.

Final Summary:

1. The class calls up their contour line drawings to the monitors. Ask the class to stand in order to view all the students' works.
   Review the drawings in terms of the stated instructional objectives.

Homework:

1. Through the use of multiple textures added to your new illustration homework add shade to your images to give the illusion of form/space/weight. Medium black and white.

References:

. Koala Pad drawing programs
. "Introductory Art in the High School."

## TOPIC 38: How to Draw a Newspaper Illustration

Sub Topic: Adding Textures to a Contour Line Newspaper Illustration, Using the IBM PC Computer and the Koala Pad Program.

Performance Objectives: Students will be able to:

- add textures to a contour line drawing saved on a data disk using the texture screens from the Koala Pad program
- add textures in limited areas
- build textures over textures to create darker patterns
- relate textured areas to light areas to give the illusion of depth and weight
- make corrections to textured areas using background colors as a "cover - over"
- print completed newspaper illustration

Aim: How can you add textures to a contour line newspaper illustration using the IBM PC Computer and the Koala Pad Program?

Materials:

- IBM PC Computer
- Koala pad program/Koala pad/Stylus
- Data Disk

Apperceptive Base:

Students received the following homework assignment in preparation for this lesson:

Through the use of multiple textures added to your newspaper illustrations homework assignment, give the illusion of:
- form
- spacial relationship
- weight

Motivation:

How can textures add interest to a composition?

How can textures add light and shade to a composition?

Development:

1. Review homework assignment.

2. Discuss relationship of texture to light and shade in the illustration

3. Review the use of texture to develop spacial relationships in the illustration.

4. Discuss how textures may be used to give the illusion of form.

5. Plan how textures may be used to give the illusion of weight.

6. Teacher demonstration: Boot up Koala drawing program in A Drive.

7. Attach the Koala pad to the game port.

8. Demonstrate how a variety of texture screens way be used in the newspaper illustration to indicate

   - form
   - spacial relationships
   - weight
   - graded values

9. Demonstrate how to make corrections to textured screens.

10. Demonstrate how to save a drawing program.

11. Demonstrate how to print a program in memory.

12. Give the class the studio assignment.

Application:

Studio assignment: On the basis of your newspaper illustration (texture) homework assignment and the class review, add textures to the drawing saved on your data disk using the Koala pad drawing, and print.

Size: 5x7

The class should be urged to save their drawings frequently on their data disks

Medial Summary:

Review two or three students' works in terms of the stated performance objectives.

Continued Application:

Class continues to work saving their newspaper illustrations with added textures on the data disk in the B drive. Students can now save and print completed drawings.

Final Summary:

The final review will be conducted while viewing the class print-outs of the newspaper illustration drawings. Questions should be asked in terms of the stated instructional objectives.

References:

Koala Pad drawing program
"Introductory Art in the High School"

## *TOPIC 39: How to Design a Newspaper Illustration*

Performance Objectives: Students will be able to:

- create a newspaper illustration that relates to a stated theme, using line, shapes and fill patterns of cross hatching and dots
- use the IBM PC computer and Koala pad program to create the illustration

Aim: How can you design a newspaper illustration using lines,shapes and textures on the IBM PC and the Koala pad program?

Materials:

- IBM PC Computer
- Koala Pad drawing program
- Drawing paper, pen and ink

Apperceptive Base:

Students receive the following homework assignment in preparation for this lesson.

Cut out a black and white newspaper story/advertisement/editorial and draw an original illustration that relates to your newspaper clip-out.

Note: The illustration should include lines, shapes, textures. The style of the illustration should be simple and direct and similar to the product of The Koala pad.

Motivation:

Describe how an illustration reinforces a newspaper article.

Development:

1. Review homework assignment.

   a. Discuss the relationship of the newspaper article to the illustration
   b. Identify the elements of composition in the illustration
      - Shapes
      - Lines
      - textures
      - relationship of design elements
   c. Discuss whether the illustration can be drawn on the IBM PC computer using the Koala Drawing program.

Note: It is assumed that serious instruction has taught the class basic drawing commands for the Koala Pad, including saving and printing.

2. Teacher demonstration, how to draw a newspaper illustration using the following Koala Pad functions like lines, point, draw and fan in contour line.

**Review of Development:**

1. Select sketch to be drawn on the computer.
2. Using the Koala pad complete the contour line illustration
3. Fill with texture
   a. add 2nd, 3rd texture overlays for original textures and tones of grey.
4. Save (Note: Students should be urged to save frequently during the production of the illustration)
5. Print

**Application:**

Class begins to interpret their individual designs on the IBM PC using the Koala Pad.

Student designers should have the ability to do the following:

- Draw using drawing commands
- Fill shapes with textures
- Make corrections
- Save
- Print

As students work with the Koala program the teacher during individual student review should reinforce:

- The relationship of image to theme
- Use of contour line
- Creating orginal fill patterns.

**Medial Summary:**

Review two or three student works in terms of the stated performance objectives.

**Continued Application:**

Students must be urged to save all completed drawings as this project will require a few full periods of class time. It is expected that the teacher will re-motivate the instructional objectives and introduce or review some phase of principles of drawing, composition and computer commands as the project continues.

**Final Summary:**

Review three or four student works in progress in terms of accomplishment of the stated performance objectives.

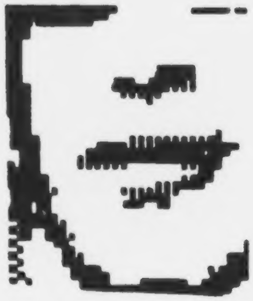
## Homework:

In your sketch pad draw an object from observation and shade the object round using cross hatching.  Medium:  Pen and ink

## Bibliography:

1. Koala Ware Owner's Manual
2. "Introductory Art in the High School "

## TOPIC 40: Flat and Three-Dimensional Shape for Drawing and Designing



Sub Topic: Shapes of the Human Portrait

Performance Objective: Students will be able to:

- recognize the basic shapes of each of the human facial features
- create the elements of a human portrait
- add on the elements which compose the human portrait
- recognize the basic shapes to create the frontal pose of the face
- introduce proportion as the way to place features together to create the finished portrait

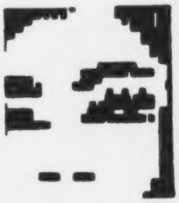
Aim:

What are the features of the human portrait? How do they translate into basic flat shapes? How can basic shapes be adjusted to create personalized human features? What are basic shapes to the face? What are the additional features which will capture the likeness of a portrait? Can we see the flat shapes translated into 3-D form? To enhance, see pgs. 8 and 9 of the NYC high school art curriculum guide.

Materials:

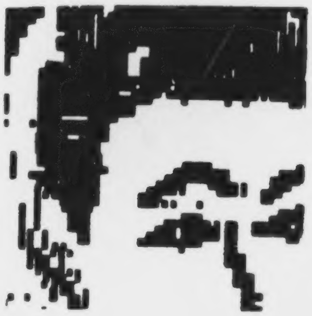
Apple II, II+, IIe, IIc or compatible with 48K bytes, Baudville's Blazing Paddles, or Koalaware's Micro-Illustrator. (If 128K is available, student can use Broderbund's Dazzle Draw), DOS 3.3 disk drive, Video Monitor, a Koalapad Touch Tablet or some method of moving the cursor, one formatted diskette per student.

Artists - mask- Bajokwe tribe, Congo, Africa; janiform dance mask- Baule tribe, Ivory coast, Africa; Pectoral Mask- Benin tribe, Nigeria; Africa. Also look at faces of Greek sculptures.



Motivation:

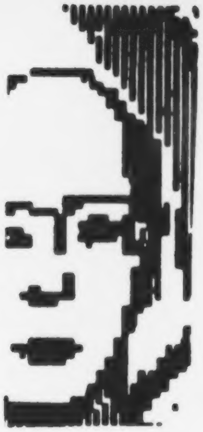
Teacher will choose three students and asks them to come up to the front of the room. The class will study and discuss for a few minutes the shape of the faces of these students, the general shape, similarities and differences. Teacher asks students to sit and writes the following on the board, "the eyes are the windows to the soul."



Procedure:

1. Why are the eyes the windows to the soul? As artists, what is the first step toward creating eyes? (determine their basic shapes)

2. What are the names of shapes of eyes which further personalize the eyes? (oval, round, almond, Bette Davis eyes, etc.)



3. What other features of the eyes give expression? (eyebrows, eyelashes, position of eyes - closed, half closed, widely opened, etc)

4. What is the basic shape of the nose? (triangular, hooked, sculptured, pug, turned-up)

5. What is the basic shape of the mouth? (oval, heart-shaped, rectangular - positioned slightly opened, screaming, puckered, pouting)

6. What is the basic shape of the ear? (oval, half-heart shaped)

7. Let's try to create the features of the face using the computer. Open the disk drive door. Hold the diskette with the label end facing you. Insert the diskette with the label facing up into the disk drive and close the door. Now, turn on the monitor and turn on the computer.

8. For this lesson, we will limit the menu to these commands; "DRAW", "LINE" and "DOTS". We can experiment with different "BRUSH" commands, however, begin with the small dot. Let's begin with "DRAW". Place the stylus on the Koala pad and place the cursor on the screen to "DRAW". With your other hand, press the top left button of the Koala pad. The screen will become a blank page ready for you to draw on. Now, press the stylus onto the pad and see the cursor appear on the blank screen. Continue to press the top left button of the pad and draw with the stylus. To discontinue a line, lift your finger or stylus from the top left button and find a new place to start with the cursor. Again, see the cursor and press the top left button to begin the next line.

9. Practice drawing shapes for the eyes, and include the eyebrows. All the features should be drawn as if the face is looking straight at you. Keep changing the eye until you see something which seems to come alive! Switch to the "MACRO" or "ZOOM" command. Home in on what you have created. You can make small changes by blotting out unwanted dots or filling in with "DOTS".

   a. Explore the possibilities of the eyes and save your favorite eyes.

   b. Continue with drawings of the nose. You can begin with a simple line and two curves on their side for the nostrils or merely create the bottom part of the nose which would include the tip and the nostrils. Save your favorite nose. Remember, you can use dots to home in on the details of the nose, to blot out unwanted pixel dots and to include missing pixel dots.

   c. Practice drawing different mouths, as they are open, closed or in a puckered position. Save your favorite nose.

   d. Try to create the half-heart, curved shape of the ears, as you would see them looking at a face looking straight at you. Draw a right and a left ear and save your most successful ears.

10. What rule do we go by to place the facial features in their proper place and create them in their proper sizes? (proportion)

Summary:

The features of the human portrait include the eyes and their additional features, the nose, the mouth and the ears. The general shape of the face, either round, angular or oval will further lend likeness to a portrait.

Homework/Assignment:

While student is doing the classwork, the facial features which are most successful should be saved on a formatted data disk. The features should include a right and left eye, a nose, a mouth, and a right and left ear.

Extra:

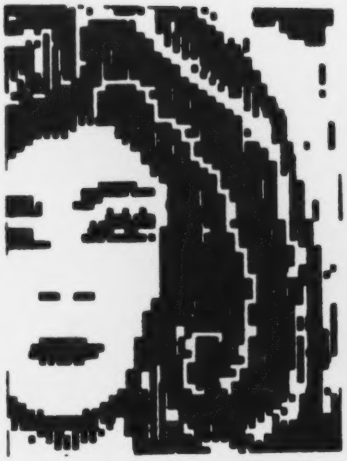
1. Create eyes which bear a resemblance to a famous person, or exaggerate the eyes to create cartoon-like emotional states of happiness, anger, surprise and sadness.

2. The student must save the drawings on a formatted data disk. The student is to document the drawing by naming it with student's last name and class, and name drawings "face features". If possible, make a print-out of each drawing.

Note: For ERASERHEADS - There are various ways to erase. You can erase the whole screen by touching the pressure sensitive pad with your finger or the stylus to move the cursor to "ERASE" and follow the instructions by choosing the color you wish the screen to turn to. You can erase a single line by changing the color to the background color and (a) try to recreate the line to be erased with a thicker brush or (b) change the command to "BOX" and "Black box" the shape out or (c) use a thick dot and dot the line out.

## TOPIC 41: *Flat and Three-Dimensional Shape for Drawing and Designing*

Sub Topic: Portrait Proportion - Size and Facial Feature Placement



Performance Objective: Students will be able to:

- define proportion
- discuss approximate size proportion of the features in relation to each other
- discuss proportions of the facial features on the shape of the face
- create the facial features in proper proportion and place them on the face
- recognize caricature as an exaggeration of the facial features in relation to each other

Aim:

What is proportion? What is the map or formula to create a face in proportion? Where do the features belong? How do the parts of the human portrait relate in size to each other? What is the effect when the features are exaggerated or out of proportion? To enhance, see pgs. 8 and 9 of the NYC high school art curriculum guide.

Materials:

Apple II, II+, IIe, IIc or compatible with 48K bytes, Baudville's Blazing Paddles, or Koalaware's Micro-Illustrator. (If 128K is available, student can use Broderbund's Dazzle Draw), DOS 3.3 disk drive, Video Monitor, a Koalapad Touch Tablet or some method of moving the cursor, one formatted diskette per student

Artists - Alfred Maurer, "Twin Heads", 1930; Ghirlandaio, "A Lady of the Sassetti Family"; Leonardo da Vinci, "Mona Lisa", 1503-05; Bellini, "Portrait of a Young Man"; Ben Shahn, "The Passion of Sacco and Vanzetti."

Motivation:

Teacher can ask students to use their favorite facial features which have been saved on a disk and to put together a human portrait by using the "CUT" and "PASTE" featues of the computer program Blazing Paddles. The results can be compared and criticized for proper size proportion and placement after students are instructed.

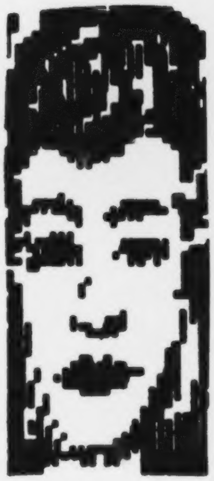
OR

Teacher could create a face with eyes or ears which are too large and ask students what is wrong with the face.

Procedure:

1. What is the first step to creating a portrait? (As artists, we first practice drawing the individual features of the portrait, and then we can continue to create likenesses of a person's portrait) We must know

proportion.



2. What is proportion? (Proportion in general is the relation of one part to another or to the whole - with respect to size and placement. It is ratio, balance, symmetry.)

3. What is the first shape we will create to begin the portrait? (the shape of the head)

4. After the shape of the head is drawn, what is next? (we divide the head in half from top to bottom, drawing a horizontal line from "ear to ear" - This line is where the eyes belong)

5. Now that we know horizontally where the eyes belong, how on this line should they be placed? (the rule is to place the eyes so that the space in between them is wide enough to fit a third eye)

6. Where should the nose be placed in relation to the head and eyes? (draw a horizontal line dividing the area between the lower face or chin and the line of the eyes in half - the bottom of the nose ends on this line)

7. Where should the mouth be placed? (draw a horizontal line dividing the lower area of the face, between the end of the nose and the chin, in half. This is the line where the mouth divides. The upper lip lays above the line and the lower lip below the line.

8. Where do the ears belong? (the ears are placed between the line of the eyes and the line of the nose)

9. How do the features compare in size? (the ears are the same approximate length as the nose, the width of the mouth is approximately the same length of the nose and ears. The width of each eye is slightly less than the width of the closed mouth)

10. Let's try to create the "map" of the face using the computer. Open the disk drive door. Hold the diskette with the label end facing you. Insert the diskette with the label facing up into the disk drive and close the door. Now, turn on the monitor and turn on the computer.

11. Follow the directions on the screen using the keys on the keyboard and the palette or main menu will appear on the screen. For this lesson, we will limit the menu to these commands; "OVAL", "DRAW", "LINE" and "DOTS". Set the "BRUSH" command for small dot.

12. Let's begin with "DRAW". Place the stylus on the Koala Pad and place the cursor on the screen to "DRAW". With your other hand, press the top left button of the Koala pad. The screen will become a blank page ready for you to draw. Now, press the stylus onto the pad and see the cursor appear on the blank screen.

13. Continue to press the top left button of the pad and draw with the stylus. To discontinue a line, lift your finger or stylus from the top left button and find a new place to start with the cursor. Again, see the cursor and press the top left button to begin the next line.

14. Draw the approximate shape of a head or use "OVAL" to create an oval shaped head. Use an approximate measure to divide the oval in half from top to bottom to get the line for the eyes.

- Divide again from the eyes to the chin to get the line for the end of the nose and nostrils.

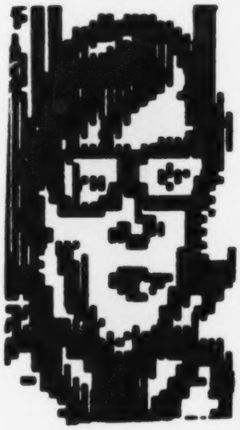
- Divide the remaining area inside the oval between the end of the nose and the chin to position the line for the mouth.

- Remember, when positioning the facial features, keep the eyes far enough apart to be able to fit a middle eye, and that the bridge of the nose is between the eyes, not the length of the nose, which meets the eyebrow.

15. Now let's create basic shapes for eyes, nose and mouth in order to create the feel of the portrait. Fit on the hair, eyebrows and details of the face. Try to create exaggerated sizes of the features to see the effect of caricature.

Summary:

Proportion is the relation of one part to another or to the whole - with respect to size or placement. It is balance and ratio. We can create the human portrait using proper proportion, relating the features to the whole of the head and relating the features to each other. Exaggerating features in size or placement is called caricature.



Homework/Assignment:

Student is to create an non-descript portrait, placing no emphasis on character, personality or sex.

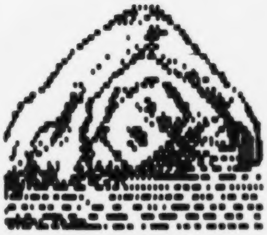
Extra:

Create a portrait and include shading to show roundness. Create a caricature of a family member or a famous person. The student must save the drawings on a formatted data disk. The student is to document the drawing by naming it with student's last name and class, and name drawings "portrait". If possible, make a print-out of each drawing.

Note: for ERASERHEADS - there are various ways to erase. You can erase the whole screen by touching the presure sensitive pad with your finger or the stylus to move the cursor to "ERASE" and follow the instructions by choosing the color you wish the screen to turn to. You can erase a single line by changing the color to the background color and (a) try to recreate the line to be erased with a thicker brush or (b) change the command to "BOX" and "black box" the shape out or (c) use a thick dot and dot the line out.

## *TOPIC 42: Flat and Three-Dimensional Shape for Drawing and Designing*

Sub Topic: Forms of the Human Figure



Performance Objective: Students will be able to:

- analyze human form for basic shapes
- use basic shapes as units for creating human form
- orient the shapes to show movement and twist
- adjust the shape to conform to the truer shape of the human form

Aim:

How do we analyze the human figure for basic shapes? What shapes can we use as elements or tools for drawing the human form? Will the shape for the body be the same as the shape of the arms and legs? Will the shapes change while showing action? How can we show action and interaction? How are the shapes refined to show true human form? To enhance, see pgs. 8 and 9 of the NYC high school art curriculum guide.

Materials:

Apple II, II+, IIe, IIc or compatible with 48K bytes, Baudville's Blazing Paddles, or Koalaware's Micro-Illustrator. (If 128K is available, student can use Broderbund's Dazzle Draw), DOS 3.3 disk drive, Video Monitor, a Koalapad touch Tablet or some method of moving the cursor, one formatted diskette per student.

Artists - Marc Chagall, "Self Portrait with Seven Fingers"; Henri Matisse, "Woman Reading", 1906; Andrea Mantegna, "The Dead Christ", 1501 (foreshortening)

Motivation:

Teacher asks students to choose any simple shape to represent a portion of the human form.

Procedure:

1. Why should we choose a simple shape to draw such a complex form such as the human form? (as we learned in Building Basic Shapes into Complex Shapes, it is easier to see, plan and draw by first seeing simple shapes)

2. What do we let the shape represent? (let the shape represent each body mass)

3. Will one size shape be appropriate to use throughout the human form? (we can use rectangles, but the size and shape of the rectangles will change as we try to describe the human form)

4. How can we learn to draw the human form in different positions? (as in all other forms of figure drawing, the best way is to observe the human figure in many different positions)

5. Where do we begin? (choose a specific area of the body, such as arm, leg, torso, hand, etc. and let the shape represent each mass which cannot bend - such as three rectangles to represent the leg and foot - one for the hip to the knee, the second for the knee to the ankle, and the third for the foot - or chose the arm and hand, - or the head and the chest)

6. Now that we have the basic shapes for the part, such as the leg and foot, how do we draw them? (again, the best way to draw is to first observe. Place your leg or ask a friend to place their leg is a certain position, and visually see the leg and foot as the three rectangles. Then try to recreate the position with the rectangles on the screen)

7. Open the disk drive door. Hold the diskette with the label end facing you. Insert the diskette with the label facing up into the disk drive and close the door. Now, turn on the monitor and turn on the computer.

8. Follow the directions on the screen using the keys on the keyboard and the palette or main menu will appear on the screen. For this lesson, we will limit the menu to the command which will create the shape that you have chosen to represent the unit of the human form. If you have chosen rectangle, then your command is "BOX", etc.

9. Let's begin with your shape, "BOX" or "OVAL". Place the stylus on the Koala pad and place the cursor on the screen to "DRAW". With your other hand, press the top left button of the Koala pad. The screen will become a blank page ready for you to draw.

10. Now, press the stylus onto the pad and see the cursor appear on the blank screen. Place the cursor so that it will become the corner of the rectangle and press the top left button of the pad. Pull the rectangle out by moving the stylus until you have the desired shape. Then press the top left button of the pad and the shape will be set.

11. Place it on the corner of the next shape and repeat. If you are using the "OVAL" command, the cursor will appear in the center of the shape you wish to create. Create the position of the mass of the human form you have chosen.

12. What are some positions you might create? (legs crossed, arms crossed, arms waving, body bending over, head resting on hand, arm reaching for something high up)

13. How can we create interaction? (include the body mass from two persons, dancing, playing sports, holding hands, adult holding a baby, two arms carrying a heavy load)

14. What happens to the unit shape as the movement changes? (if the body part is coming out at you, foreshortening happens. The length of the limb appears shorter and the size of the form coming out at you and closet to the viewer becomes larger)

15. How does the angle of the shape represent movement? (when the shapes are drawn with more angles and angular directions in relation to each other, the more movement will be created. When the shapes are horizontal and vertical, the form will become static or motionless)

16. When will the shapes look like true human form? (the shapes must be rounded out, contour lines drawn to connect the unit shapes and make a shape that more resembles the human form)

Summary:

1. We can use basic shapes to see human form and easily create the masses of the human form in interesting positions. The best way to draw the human form is to first observe it.
2. Foreshortening happens when the form seems to come out at you. To create interaction we draw forms which represent more than one figure involved in the action.
3. The more angle to the shapes, the more movement is created. The shapes must be outline and refined in order for the human quality to take shape.

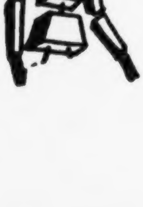
Homework/Assignment:

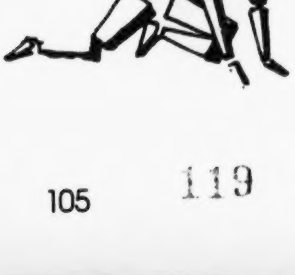
Student is to use the human parts created during the lesson, showing an action, and finesse or refine the shapes to resemble the actual human form in roundness and direction.

Extra:

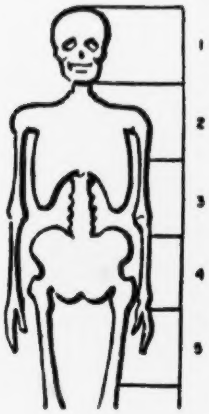
Create a human torso which appears to be eating at a table. The student must save the drawings on a formatted data disk. The student is to document the drawing by naming it with student's last name and class, and name drawings "human forms". If possible, make a print out of each drawing.

Note: For ERASERHEADS - There are various ways to erase. You can erase the whole screen by touching the pressure sensitive pad with your finger or the stylus to move the cursor to "ERASE" and follow the instructions by choosing the color you wish the screen to turn to. You can erase a single line or area by changing the color to the background color and (a) try to recreate the line to be erased with a thicker brush or (b) change the command to "BOX" and "black box" the shape out or (c) use a thick dot and dot the line or area out.





# *TOPIC 43: Flat and Three-Dimensional Shape for Drawing and Designing*



Sub Topic: Human figure Proportion

Performance Objectives: Students will be able to:

- define proportion
- relate the sizes and lengths of the forms of the human figure with each other
- relate the proportion of the whole human figure
- create the parts of the human figure in proper proportion
- know the exaggerated length of the fashion figure

Aim:

What is proportion? What is the map or formula to create a figure in proportion? How do the parts of the human figure relate in size to each other? What is the proportion of the whole human form? What is the unit of measurement? How is the fashion figure proportion different from the norm? To enhance, see pgs. 8 and 9 of the NYC High School Art Curriculum Guide.

Materials:

Apple II, II+, IIe, IIc or compatible with 48K bytes, Baudville's Blazing Paddles, or Koalaware's Micro-Illustrator. (If 128K is available, student can use Broderbund's Dazzle Draw), DOS 3.3 disk drive, Video monitor, a Koalapad Touch Tablet or some method of moving the cursor, One formatted diskette per student.

Artists - Marcel Duchamp, "Nude Descending Staircase", 1912; Milton Avery, "Mother and Child", 1944; John Sloan, "Women Drying their Hair", 1912; George Bellows, "Dempsey and Firpo", 1924.

Motivation:

Teacher asks students to volunteer to have their figures "mapped" out for the good of the education of the class in the lesson on human proportion giving five extra points on their figure grade.

Procedure:

1. What is the first step to creating a human figure? (as artists, we first practice drawing the individual forms or parts of the figure. We must know proportion.)

2. What is proportion? (proportion in general is the relation of one part to another or to the whole - with respect to size and placement. It is ratio, balance, symmetry)

3. What is the first shape we will create to begin the figure? (the shape of the head)

4. After the shape of the head is drawn, what is next? (we divide the drawing or designing area to fit eight and one-half heads, which is our unit of measurement) Teacher now maps out the number of heads composing the human figure using the student volunteer.

5. What is the proportion of the parts of the figure in relation to each other? and to the whole? (if the human form is flexible enough to fold in half at the hips, the top half of the body will be a half a head length shorter than the bottom half of the figure in number to head lengths:

   The arm from the shoulder to the wrist is 3 heads, the leg from the hip to the ankle is 4 heads, the torso from the top of the head to the waist is 3 heads, between the waist and the hips is 1 head, the hand is approximately 1 head length the foot is slightly more than 1 head length

6. Using the hips as the dividing line, counting up from the hips is 4 head lengths including the head, the neck and underarms, the chest and waist, and the hips. This leaves the legs which from the hip to the knee are 2 head lengths, from the knee to the ankle are 2 head lengths, and from the ankle to the foot, 1/2 head length

7. Let's try to create the "map" of the face using the computer. Open the disk drive door. Hold the diskette with the label end facing you. Insert the diskette with the label facing up into the disk drive and close the door. Now, turn on the monitor and turn on the computer.

8. Follow the directions on the screen using the keys on the keyboard and the palette or main menu will appear on the screen.

9. For this lesson, we will limit the menu to these commands; "OVAL", "LINE" and "DRAW". Set the "BRUSH" command for small dot.

10. Let's begin with "OVAL". Place the stylus on the Koala pad and place the cursor on the screen to "OVAL". With your other hand, press the top left button of the Koala pad. The screen will become a blank page ready for you to draw.

11. Now, press the stylus onto the pad and see the cursor appear on the blank screen. The cursor indicates the center of the oval. Press the top left button of the pad to set the center of the oval in the proper place. Now move the stylus in a direction and pull the oval open.

12. When the oval is the desired shape, again press the top left button of the pad and the shape is set.

13. Draw the approximate shape of a head or use "OVAL" to create an oval shaped head. Use an approximate measure so that you will be able to fit at least 8 1/2 heads on the drawing area of the screen. The torso, though slightly wider than the head length as is the area of the hips, is approximately 1 head length wide. Leg width will vary but is approximately 1/2 the length of a head. Map out a human figure by drawing lines at the beginning and end of each head measurement on the figure.

14. How do we plan out the human figure to draw? (we use a shape measured to the unit of the head, such as 2 head lengths or four head lengths, or one head length, and we orient the shape to create the desired action or interaction.

15. Why is the fashion figure elongated or made longer than the normal figure length? (the fashion figure is ten head lengths or more. the extra area allows the artist the space needed to give grace and detail to the fabric and design of the clothing. The unit of measurement is still one head length, however there are extra head lengths given to the torso of the figure and to the legs of the figure therefore creating increased length to the clothed area of the body.

Summary:

Proportion is the relation of one part to another or to the whole - with respect to size or placement. It is balance and ratio. We can create the human figure using proper proportion, relating the features to the whole using the head as a unit of measurement of the body parts. There are 8 1/2 head lengths to the normal figure and 10 plus head lengths to the fashion figure, in order to create grace and area for description of details.

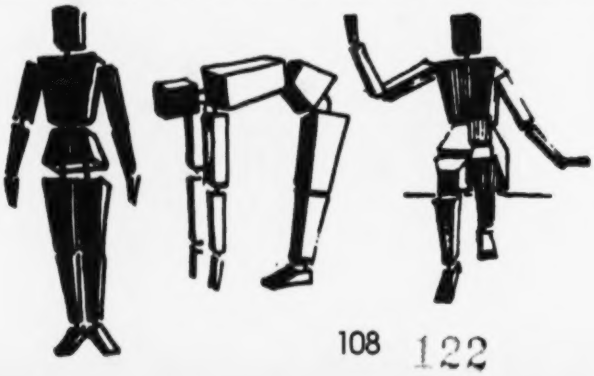
Homework/Assignment:

Student is to create a human figure standing face forward in proper proportion.

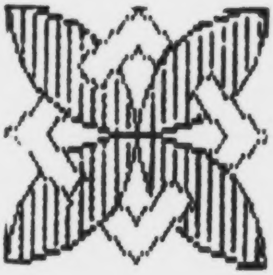
Extra:

Create a human figure in an action pose in proper proportion. Create a fashion figure, elongating the torso and legs. The student must save the drawings on a formatted data disk. The student is to document the drawing by naming it with student's last name and class, and name drawings "figure". If possible, make a print-out of each drawing.

Note: for ERASERHEADS - There are various ways to erase. You can erase the whole screen by touching the pressure sensitive pad with your finger or the stylus to move the cursor to "ERASE" and follow the instructions by choosing the color you wish the screen to turn to. You can erase a single line by changing the color to the background color and (a) try to recreate the line to be erased with a thicker brush or (b) change the command to "BOX" and "Black box" the shape out or (c) use a thick dot and dot the line out.



## TOPIC 44: Two-Dimensional Line for Drawing and Designing



Sub Topic: Line is the First Basic Element of Design

Performance Objective: Students will be able to:

- define line and know line as a basic element of design
- recognize and identify the two line groups and name lines that belong to each group
- associate connotations and objects with line groups
- create a variety of lines on the computer screen

Aim:

What is a line? What are the two basic groups of lines? How many different types of lines are there in each group? What are the connotations of each? What are some objects made with these types of lines? How can they be created on the computer screen? To enhance pgs. 6, 18, 19 of the NYC high school art curriculum guide.

Materials:

Apple II, II+, IIe, IIc, or compatible with 48K bytes, Baudville's Blazing Paddles, or Koalaware's Micro-Illustrator. (If 128K is available, student can use Broderbund's Dazzle Draw), DOS 3.3 disk drive, Video Monitor, a Koalapad Touch Tablet or some method of moving the cursor, one formatted diskette per student.

Artists - Curvilinear - Vincent Van Gogh, master artists' figure drawings, Jackson Pollock; Straight-lined - Bernard Buffet, John Marin, Cambiaso, Charles Demuth

Motivation:

Teacher asks student in class to stand up and tell the class the five elements of art. Ask students who do not know to guess.

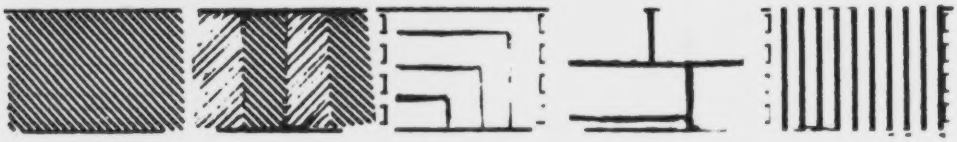
Procedure:

Teacher writes all the students' responses on the blackboard. Students are then asked to take down the following given information. "the elements of design are line, shape, color, texture, and space."

1. What is the definition of line? (students are to define line as "a connection between two points.")

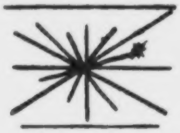
2. What are the main line groups? (students are to list the two main groups as "straight and curve.")

3. What are the names of different types of straight lines?



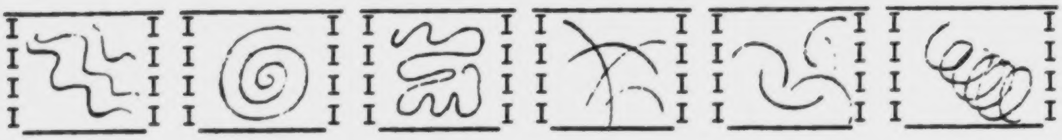
(diagonal, zigzag, angled, perpendicular, parallel,

radiating)



4. What are some connotations of straight-lined "things"? (architercture, furniture, city planning, rockets)

5. What are the names of different types of curved lines?



(wavy, spiral, meandering, arcs, half circles, coils)

6. Which group of line suggests the feeling of form or mass? (curve line)

7. Which group of line suggest movement back into space? (straight diagonal)

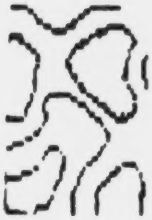
8. How do we create various types of lines with the computer? Open the disk drive door. Hold the diskette with the label end facing you. Insert the diskette with the label facing up into the disk drive and close the door. Now, turn on the monitor and turn on the computer.

9. Follow the directions on the screen using the keys on the keyboard and the palette or main menu will appear on the screen. For this lesson, we will limit the menu to these commands; "DRAW" and "LINE". We will limit the "BRUSH" to the small dot.

10. Let's begin with "DRAW". Place the stylus on the Koala Pad and press the top left button of the Koala pad. The screen will become a blank page ready for you to draw on. Now, press the stylus onto the pad and see the cursor appear on the blank screen.

11. Continue to press the top left button of the pad and draw with the stylus. To discontinue a line, lift your finger or stylus from the top left button and find a new place to start with the cursor. Again, see the cursor and press the top left button to begin the next line.

12. Practice drawing curved lines; wavy, spiral half circles, and then try to draw straight lines. These are more difficult to create. Try to draw straight diagonal, perpendicular, parallel, grids.

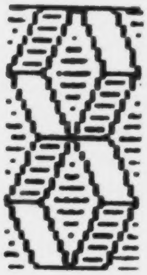


13. Now, stop drawing the lines, and press the top left button on the Koala pad. You will see the palette again. Press the stylus down and direct the cursor to "LINE". Then press the top left button again to get back on the drawing page and press the stylus to pad to make the cursor appear on the screen.

14. Pressing the top left button will start the straight line. Moving the stylus will make the line appear. When you see the desired line, press the button again and the line you desire will remain. Practice drawing straight lines on the line command. Try to create the various types of straight line arrangement.

Summary:

Line is the first basic element of design and drawing. The two groups of lines, both straight and curved, can represent visual concepts of art. Curvy lines suggest the feeling of form or mass. Straight diagonal lines suggest movement back into space.



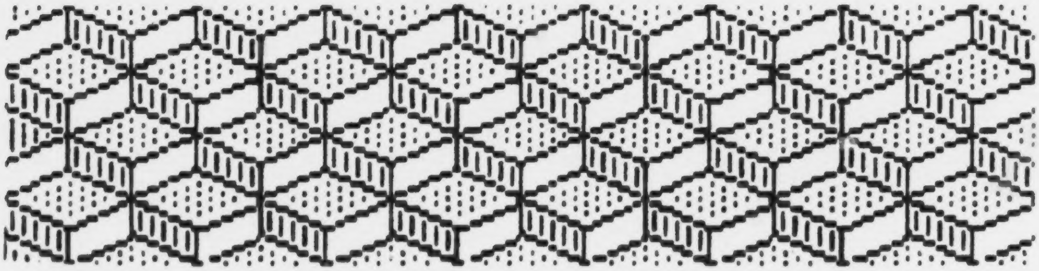
Homework/Assignment:

To create a drawing using all curved lines. To create a drawing using all straight lines. To create a drawing using straight lines in combination with curved lines.

Extra:

Create a line design in which the lines will connect when it repeats itself. When the linear design is repeated, an additional new design will unfold. The student must save the drawings on a formatted data disk. The student is to document the drawing by naming it with student's last name and class, and name drawings "straight", "curved", "combination". If possible, make a print out of each drawing.

Note: For ERASERHEADS - There are various ways to erase. You can erase the whole screen by touching the pressure sensitive pad with your finger or the stylus to move the cursor to "ERASE" and follow the instructions by choosing the color you wish the screen to turn to. You can erase a single line by changing the color to the background color and (a) try to recreate the line to be erased with a thicker brush or (b) change the command to "BOX" and "black box" the line area out.



# *TOPIC 45: Two-Dimensional Line for Drawing and Designing*

Sub Topic: Outline and Contour

Performance Objective: Students will be able to:

- identify and define outline, silhouette, contour and blind contour
- use each type of line to define form on the computer screen

Aim:

What is form? How can we create form with line? What is an outline? How does outline describe form? How does an outline differ from a silhouette? What is a contour line? How does a contour line describe form? What is a blind contour drawing? To enhance pgs. 6, 18, 19 of the NYC high school art curriculum guide.

Materials:

Apple II, II+, IIe, IIc or compatible with 48K bytes, Baudville's Blazing Paddles, or Koalaware's Micro-Illustrator. (If 128K is available, student can use Broderbund's Dazzle Draw), DOS 3.3 disk drive, Video Monitor, a Koalapad Touch Tablet or some method of moving the cursor, one formatted diskette per student. Each student must have a pencil and paper.

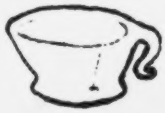
Artists - Picasso studies for Guernica, 1937, and drawing "Diaghilev and Selisburg", 1917

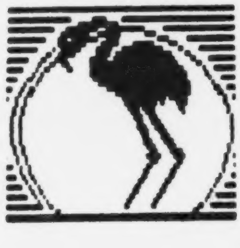
Motivation:

Teacher demonstrates with chalk on chalkboard or at the computer with stylus and Koala pad - how to create a blind contour drawing of something in the room, by looking at an object and drawing its image.

Procedure:

Students will be given prior instruction to bring in an object of their choosing to use in class or to use any object they can see in the room.





1. "A blind contour drawing is a very complex combination of the use of lines at work."
2. What is an outline? (A line which describes and gives outer limits to a form.)
3. How is an outline different from a silhouette? (A silhouette represents the outline of a form filled in with black or some uniform color.)
4. Why is a contour line more complex than an outline? (A contour line describes both the inner and outer forms of an object or mass.)

5. The teacher may now illustrate the concept of outline by drawing a cup, and further illustrate the contour of the cup by drawing in both the inner lines of the form and the highlight lines.

6. What creates the unique quality of the blind contour drawing? (A blind contour drawing is created with one continous line which is unbroken. The artist may not look at the drawing until it has a sense of completeness and then it must not be altered.)

7. All the students will then be asked to create a drawing of the object they brought using pencil and paper. The first drawing will be an outline.

8. What will all the drawings created in class have in common? (the drawings will be of a shape.)

9. As soon as the outline drawing is completed, the student may add one additional line to the drawing to best describe the form.

10. What is the name of this additional line? (contour line) When this is complete, student then shows work on paper to class instructor and may then create the drawing using the computer tools.

11. Open the disk drive door. Hold the diskette with the label end facing you. Insert the diskette with the label facing up into the disk drive and close the door. Now, turn on the monitor and turn on the computer.

12. Follow the directions on the screen using the keys on the keyboard and the palette or main menu will appear on the screen. For this lesson, we will limit the menu to these commands; "DRAW" and "LINE". Place the stylus on the Koala pad and place the cursor on the screen to "DRAW".

13. With your other hand, press the top left button of the Koala pad. The screen will become a blank page ready for you to draw on. Now, press the stylus onto the pad and see the cursor appear on the blank screen. Continue to press the top left button of the pad and draw with the stylus.

14. To discontinue a line, lift your finger or stylus from the top left button and find a new place to start with the cursor. Again, see the cursor and press the top left button to begin the next line. Student creates the outline drawing and then adds the contour line using the computer equipment.

Summary:

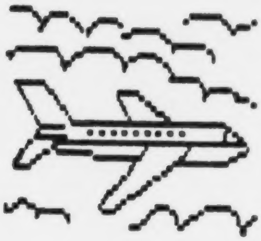
Line is the first basic element of design and drawing. The two groups of lines, both straight and curved, can represent visual concepts of art. Curvy lines suggest the feeling of form or mass. Straight diagonal lines suggest movement back into space.

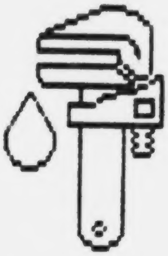
Homework/Assignment:

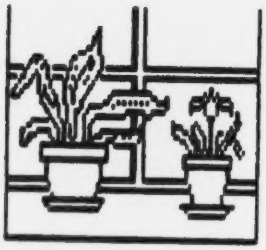
To create a blind contour drawing including the form or object in a setting and background. All the area of the drawing must be incorporated in the drawing.

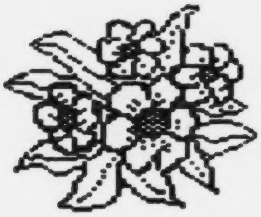
Extra:

Create a design for a neon sculpture using the idea of a continuous outline and/or contour line. The student must save the drawings on a formatted data disk. The student is to document the drawing by naming it with student's last name and class, and name drawings "outline with contour" and "blind contour drawing". If possible, make a print-out of each drawing.









## *TOPIC 46: Two-Dimensional Line for Drawing and Designing*

Sub Topic: Weight, Overlap and Absence of Line

Performance Objective: Students will be able to:

- define the weight of a line and overlapping
- produce lines of different weight to achieve effects;
- create the illusion of a line lit by a light source and one which is in shadow
- create the illusion of foreground lines vs. background lines
- create harmony and rhythm using the absence of line

Aim:

What is the weight of a line? How does the weight of a line affect the viewer's perception of the drawn form? What effect does overlap create? What is the desired effect when a line is absent? What happens when a line which should be apparent is left out? to enhance pgs. 6 and 19 of NYC High School Art Curriculum Guide.

Materials:

Apple II, II+, IIe, IIc or compatible with 48K bytes, Baudville's Blazing Paddles, or Koalaware's Micro-Illustrator. (If 128K is available, student can use Broderbund's Dazzle Draw), DOS 3.3 disk drive, Video monitor, a Koalapad Touch Tablet or some method of moving the cursor, one formatted diskette per student.

Artists - Schongauer drawing, "A Foolish Virgin"; Rembrandt drawings; Dufy, "The Artist's Studio."

Motivation:

Teacher poses the problem to the class: "We are not allowed to smudge or fill in. Nor are we allowed to change colors. The question is how can we represent the light vs. the dark side of a form or object?"

Procedure:

Teacher asks for student responses to the question. Teacher then makes the following statement:

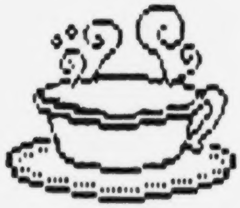
1. "There are many different effects which line can create." The teacher directs students to inquire about line.

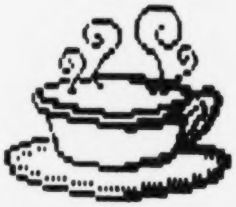
2. What happens when the emphasis of the form is made with a solid and thick line? (The solid, thick line becomes more important, or dominant)

3. What effect does the solid, thick line create? (The line represents something darker.)

4. Does a thin line have the opposite effect? (Yes, a thin line represents

something lighter and is less important.)





5. We see how this works by the teacher demonstration using thicker and thinner lines to create a tea cup. (see illustration)

6. What happens to form when a line is drawn on top of another line? (The form described by the line on top appears to be in front of the form described by the first line.)

7. What effect is created by using a dotted line? (the dotted line will recede and by convention represents fading away.)

8. The teacher then draws an incomplete circle either on the blackboard or on the Koala pad. The teacher asks the class the name of the shape. (circle) "Even though the circle was incomplete, the eye will fill in the missing element of a line which describes a form.

9. This phenomena can be used creatively to create connect space, either pushing space back or pulling it forward." The student will now use line to create a simple computer-drawn object in a scene showing its light and dark side by changing the thickness and thinness of the lines used.

10. Open the disk drive door. Hold the diskette with the label end facing you. Insert the diskette with the label facing up into the disk drive and close the door. Now, turn on the monitor and turn on the computer.

11. Follow the directions on the screen using the keys on the keyboard and the palette or main menu will appear on the screen. For this lesson we will limit the menu to these commands; "DRAW" and "LINE".

12. We will use the different dot sizes of "BRUSH". Let's begin with "DRAW". Place the stylus on the Koala pad and place the cursor on the screen to "DRAW". With your other hand, press the top left button of the Koala pad. The screen will become a blank page ready for you to draw on.

13. Now, press the stylus onto the pad and see the cursor appear on the blank screen. Continue to press the top left button of the pad and draw with the stylus. To discontinue a line, lift your finger or stylus from the top left button and find a new place to start with the cursor. Again, see the cursor and press the top left button to begin the next line.

Summary:

1. Weight of a line is the thickness and thinness of a line. Different effects are created when using thicker and thinner lines. A dark, thick line reperesents the dark side of a form and takes a dominant place in the picture. A light thin line represents the light side of a form and takes a subordinate place in the drawing.

2. Overlapping line creates the effect of form placement in front of or behind another form. When a form is behind another form, part of the line of the form is hidden.

3. The eye will fill in for an absent line which should be in the picture to describe a form. This allows the artist to push space back as well as pull it forward. All these line qualities can be used to create harmony and rhythm in a drawing.

Homework/Assignment:

To create a drawing of the same object the student used to create the contour drawing. The student will now use different weights in their lines and create a complete still-life-like scene. Use absence of line for an interesting effect.

Extra:

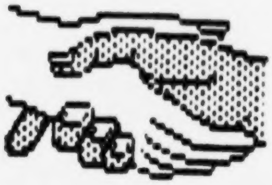
Create a drawing of a scene, either landscape or still-life which emphasizes the absence of line to describe form. The student must save the drawings on a formatted data disk. The student is to document the drawing by naming it with student's last name and class, and name drawing "weight and overlap drawing" If possible, make a print-out of each drawing.

Note: For ERASERHEADS - There are various ways to erase. You can erase the whole screen by touching the pressure sensitive pad with your finger or the stylus to move the cursor to "ERASE" and follow the instructions by choosing the color you wish the screen to turn to. You can erase a single line by changing the color to the background color and (a) try to recreate the line to be erased with a thicker brush or (b) change the command to "BOX" and "black box" the line area out.

# TOPIC 47: Two-Dimensional Line for Drawing and Designing

Sub Topic: Line as tonal value, shadow and shading

Performance Objective: Students will be able to:



- recognize and identify use of repeating line, cross-hatching, dotting, stippling
- create the illusion of a tone of a form using lines
- create shadow and shading of a form using lines
- create tone using line outside of the form
- create a balance of lights and darks in the drawing
- produce a tonal drawing creating a mood using line

Aim:

What is tonal value? How can we create the shading and shadows of the form, as it is changed by light using line? How can we balance the lights and darks of a drawing to create a mood? To enhance pgs. 6, 8, 9, 78, and 79 of the NYC high school art curriculum guide.

Materials:

Apple II, II+, IIe, IIc or compatible with 48K bytes, Baudville's Blazing Paddles, or Koalaware's Micro-Illustrator. (If 128K is available, student can use Broderbund's Dazzle Draw), DOS 3.3 disk drive, Video monitor, a Koalapad touch Tablet or some method of moving the cursor, one formatted diskette per student.

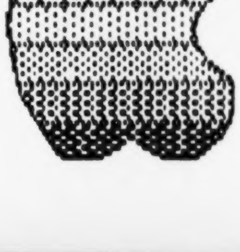
Artists - Tonal value - Claude, "Trees and Hills"; Hogarth, "The Industrious Apprentice Performing the Duty of a Christian", 1747; Cross-hatch - (outer form and inner form) Pontormo, "Nude Boy Seated"; variety of etchings by master artists; Shadow - Leonardo da Vinci, "Nude on Horseback", 1485; Master Artists etchings; Max Ernst, Ninth Picture from "L'Eau", 1934.

Motivation:

Teacher draws a circle on the blackboard using chalk or on the monitor using stylus and Koalapad. Teacher asks a student to turn the circle into a dark circle. Then, to turn the dark circle into a sphere.

Procedure:

Teacher calls on a student to respond to the problem. If students do not respond, teacher demonstrates to the side of the circle drawing different line patterns the student can use to create the dark tone.



1. What other linear patterns can be used to create a light or dark tone?
2. What is stippling? (Stippling is creating short flicking lines)
3. Which line, straight or curved, would you choose in

order to give tonal value to a box and at the same time describe the form? (straight lines)

4. Which group of lines would you choose to give tonal value to a round form? (curved line)

5. Teacher makes the statement, "The line used to give tonal value to a form follows the contour of the form by curving along or continuing straight, etc."

6. How does one go about setting the tone of an object? (Ask if it is light or dark as compared to the other objects in the drawing)

7. How does one go about setting the tone of a drawing? (Asks which areas of the drawing are lighter and which areas are darker)

8. Teacher then works with the class creating tonal value charts on the monitor with the stylus and Koala pad. The screen will be divided into eight sections and students will fill the sections with eight line patterns created using "LINE" and "DRAW" commands.

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|---|---|---|---|
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9. The patterns should graduate, beginning with the lightest and ending with the darkest.

10. Open the disk drive door. Hold the diskette with the label end facing you. Insert the diskette with the label facing up into the disk drive and close the door. Now, turn on the monitor and turn on the computer.

11. Follow the directions on the screen using the keys on the keyboard and the palette or main menu will appear on the screen. For this lesson, we will limit the menu to these commands; "DRAW" and "LINE". We will limit "BRUSH" to the smallest dot size.

12. Let's begin with "DRAW". Place the stylus on the Koala pad and press the top left button of the Koala pad. The screen will become a blank page ready for you to draw on. Now, press the stylus onto the pad and see the cursor appear on the blank screen.

13. Continue to press the top left button of the pad and draw with the stylus. To discontinue a line, lift your finger or stylus from the top left button and find a new place to start with the cursor.

14. Again, see the cursor and press the top left button to begin the next line. By making the lines closer the tone will be darker. By making the lines farther away the tone will be lighter.

Summary:

1. Tonal value is the lightness and darkness of a form or drawing. We can create tonal value with lines using repeating line, cross-hatching, stippling and dotting. One develops the tone of an object and the tones of the areas of the drawing before details are fixed.

2. A darker balance of tonal value will create a somber and dull mood, or a night mood. A lighter balance will create a brighter or gay mood, or a daytime mood. A well balanced drawing will contain both light and dark areas.

3. Tonal value is used to create form. Cross-hatching, dotting, stippling will create shading of a form and will also shadow a form. All these line qualities can be used to create harmony and rhythm in a drawing.

Homework/Assignment:

To create a drawing of the same object the student used to create the contour drawing. The student will now use tonal value using repeating lines, cross-hatching, stippling to create shading and shadows on the object and create light and dark outside of the object. Student will fill in the scene with different tonal value to create a mood.

Extra:

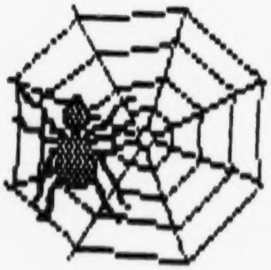
Read a poem, short story or newspaper editorial. Create an illustration for it using cross-hatching and stippling for tone, shadow and shading. The student must save the drawings on a formatted data disk. The student is to document the drawing by naming it with student's last name and class, and name drawing "tonal value drawing". Print out.

Note: For ERASERHEADS - There are various ways to erase. You can erase the whole screen by touching the pressure sensitive pad with your finger or the stylus to move the cursor to "ERASE" and follow the instructions by choosing the color you wish the screen to turn to. You can erase a single line by changing the color to the background color and (a) try to recreate the line to be erased with a thicker brush or (b) change the command to "BOX" and "black box" the line area out.

## TOPIC 48: Two-Dimensional Line for Drawing and Designing

Sub Topic: The Gesture Line

Performance Objective: Students will be able to:



- define gesture line
- identify action painting as an example of using gesture line
- create form with gesture line
- create shadow and shading using gesture line
- create weight in form using gesture line

Aim:

What is a gesture line? Does an artist try to capture reality of a form or an immediate response to a form using gesture line? Which artist immitated gesture line to create action paintings? How does gesture line capture a moment or an action? How can gesture line describe the weight of a form? To enhance pgs. 6, 18, 19 of the NYC high school art curriculum guide.

Materials:

Apple II, II+, IIe, IIc or compatible with 48K bytes, Baudville's Blazing Paddles, or Koalaware's Micro-Illustrator. (If 128K is available, student can use Broderbund's Dazzle Draw)< DOS 3.3 disk drive, Video monitor, a Koalapad Touch Tablet or some method of moving the cursor, one formatted diskette per student.

Artists - Brancusi, "Mile Pogany" drawing 1912; Rembrandt, "Saskia Asleep" drawing with brush before 1642; Jackson Pollack action paintings, "Cathedral", 1947.

Motivation:

Teacher tells class that a warning will be given to the class and to watch and listen. Teacher says, "You'd better stay far away from here," and uses an arm gesture to emphasize the far away. Teacher then asks the class, "What did I do with my arm"?

Procedure:

Teacher calls on all the students with responses and then defines the movement as a gesture.

1. What would that gesture look like if there were a brush filled with paint in hand and made a line on a painting surface?

2. What then is a gesture? (Gesture is a line that emphasizes or expresses an idea or an emotion.)

3. What is a gesture drawing? (A gesture drawing uses one continuous line to explore a form. A gesture drawing uses one stroke lines to capture for example a body in action, a person's expression, an object in the

split second of a moment.

4. What is the nature of the gesture line? Is it drawn with speed or very slowly and deliberately? (It is a quickly drawn line.)

5. Is it a simple line or a complex line? (It can be as simple as a single curve or as complex as a blind contour line which describes a complete scene)

6. Let's create a gesture drawing. Open the disk drive door. Hold the diskette with the label end facing you. Insert the diskette with the label facing up into the disk drive and close the door. Now, turn on the monitor and turn on the computer.

7. Follow the directions on the screen using the keys on the keyboard and the palette or main menu will appear on the screen. For this lesson, we will limit the menu to the "DRAW" command. We will limit the "BRUSH" to the small dot.

8. Let's begin with "DRAW". Place the stylus on the Koala Pad and place the cursor on the screen to "DRAW". With your other hand, press the top left button of the Koala pad. The screen will become a blank page ready for you to draw on. Now press the stylus onto the pad and see the cursor appear on the blank screen.

9. Continue to press the top left button of the pad and draw with the stylus. To discontinue a line, lift your finger or stylus from the top left button and find a new place to start with the cursor. Again, see the cursor and press the top left button to begin the next line.

10. Student practices drawing quick lines using sweeping arm actions, and uses the blind contour-like line to explore how to create a round form. Perpendicular, parallel, grids.

11. How can the gesture line be use to create tone, shadow, shading and the effect of weight? (By redrawing over an already drawn area, a darker tone can be created. Line built on top of other line will darken the area creating tone, shadow, shading or weight)

Summary:

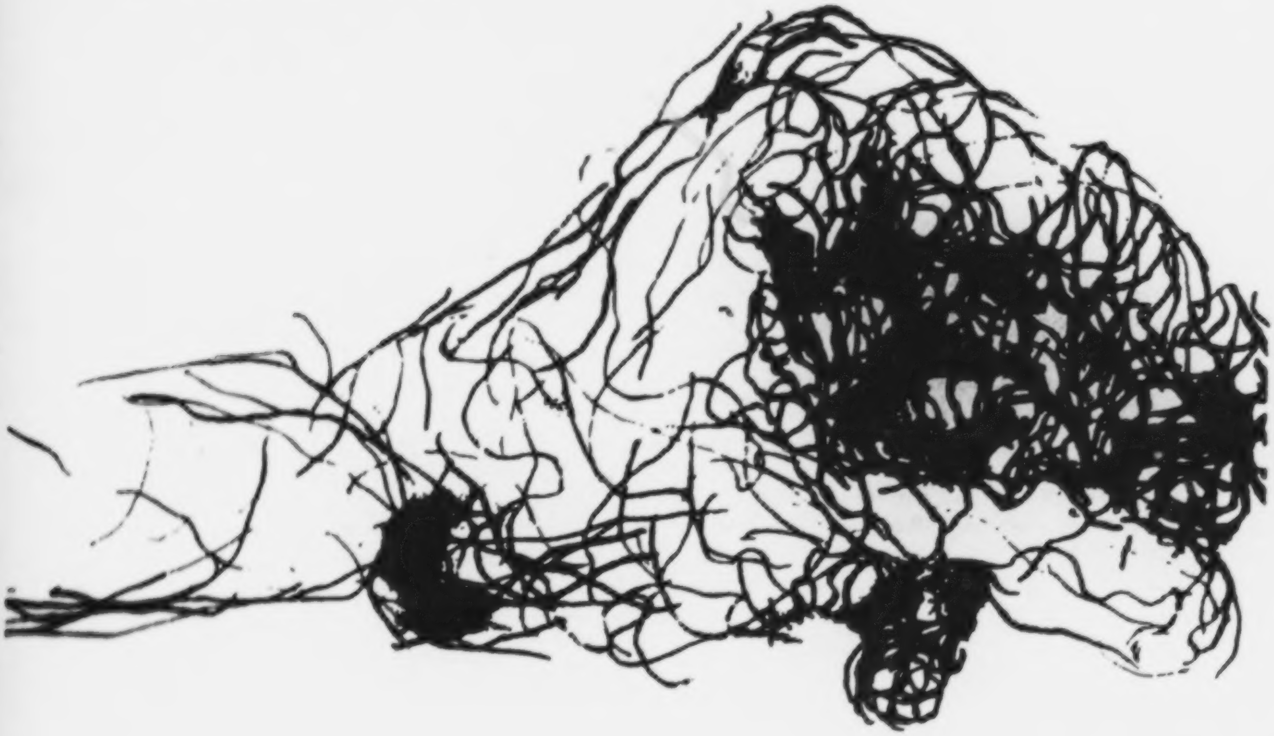
A gesture line captures the essence of a form in many ways. It is a very expressive line. It is drawn in an almost instinctive manner. A gesture line is complete the second it is drawn using a sweeping gesture of the arm. It can also be a continous type of blind contour line which moves back and forth across the drawing to explore and "feel out" form. By using a thick gesture line, and by building up the thin gesture line, the artist can create tone, shadow, shading or weight of a form.

Homework/Assignment:

To create the student's objective drawing this time using gesture line to create the entire scene.

**Extra**:

Using gesture line, create a monogram which will contain the three initials of your name. The student must save the drawings on a formatted data disk. Student is to document the drawing by using student's last name, class and assignment name, "Gesture".



## *TOPIC 49: Two-Dimensional Line for Drawing and Designing*

Sub Topic: The Solid Black Line

Performance Objective: Students will be able to:

- discuss different ways of creating a solid black line
- cite specific artists who used the solid black line as a design element in their drawings and paintings
- become familiar with the work of Roy Lichtenstein and how the art world was right to accept his comic book frame paintings as art
- create a comic book or cartoon character using the solid black line as a major element of the design
- create a comic using this character

Aim:

How have contemporary artists used the solid black line? How does the weight of the line effect the drawing or painting's overall look? What are the applications for the solid black line for cartooning? How did Roy Lichtenstein make people realize that comic book art is a fine art form? To enhance pgs. 81 and 82 of the NYC high school art curriculum guide.

Materials:

Apple II, II+, IIe, IIc or compatible with 48K bytes, Baudville's Blazing Paddles, or Koalaware's Micro-Illustrator. (If 128K is available, student can use Broderbund's Dazzle Draw), DOS 3.3 disk drive, video Monitor, a Koalapad Touch Tablet or some method of moving the cursor, one formatted diskette per student, one software disk per three students.

Artists - Stuart Davis, "The Paris Bit", 1959; Picasso, "The Studio", 1927-28; Roy Lichtenstein, comics series, "Half Face with White Collar", 1963, "Drowning Girl"; Piet Mondrian, "Composition", 1921; Max Beckman, "Actresses", 1946; Giorgio de Chirico, "The Uncertainty of the Poet", 1913.

Motivation

Teacher will focus on the topic of comic characters by asking the students to think of three of their favorite comic book or newspaper comic characters, and then ask the students, "What do all of the comic book and comic strip characters have in common?"

Procedure:

Teacher will direct the students to think of the outline and contour lines of the comic characters. If answer is not elicited from the students, teacher will give answer - a solid black line.

1. Why is the solid black line an important element in the character? (Since the colors used are mainly flat, the solid line divides the major areas, it gives unity to the overall comic from frame to frame, and gives a unified look to all comics in general)

2. Do we see the solid black line used as a contour line to create form? (It is mainly used as an outline. It is also used as contour line for muscles, hair and folds of clothing.)

3. What is weight of the line used? (When it is used as an outline, the line has different weights to suggest form and to suggest direction of the light source.)

4. Is the solid black line used to represent tonal value? (The colors generally represent tonal value, however the black lines are stippled to represent shadow and shading.)

5. Who used the solid black lines in their paintings? (Artists such as Picasso, Stuart Davis, Max Beckman, Piet Mondrian and Giorgio de Chirico. The most appropriate to the lesson is Roy Lichenstein. His paintings saw popularity after the rise of Pop Art and Op Art.)

6. His Pop Art paintings took specific frames from a comic book and he blew them up to the size of an entire wall. He used the flat colors and also used large dots to depict the way in which the comic book is printed. He incorporated the use of the solid black line in the same way the comic books did.

7. It was at this time in the 1960's that artists tried to make the public aware of the art all around them, in comics and as labels on the supermarket shelves, etc.

8. The student must use the solid black line and create a new comic character. The student may also use the many commands on the software menu for creating shapes and may use different colors in the fill mode to create the comic character. The solid black line should be used in all the ways discussed in the lessons up to this point.

9. Open the disk drive door. Hold the diskette with the label end facing you. Insert the diskette with the label facing up into the disk drive and close the door. Now, turn on the monitor and turn on the computer.

10. Follow the directions on the screen using the keys on the keyboard and the palette or main menu will appear on the screen. For this lesson, we will limit the menu to these commands: "DRAW" and "LINE". We will not limit "BRUSH" to anything specific. We will begin to use "SHAPE", "COLOR" and "FILL" commands.

11. Let's begin with "DRAW". Place the stylus on the Koala pad and place the cursor on the screen to "DRAW". With your other hand, press the top left button of the Koala pad. The screen will become a blank page ready for you to draw on. Now, press the stylus onto the pad and see the cursor appear on the blank screen.

12. Continue to press the top left button of the pad and draw with the stylus. To discontinue a line, lift your finger or stylus from the top left button and find a new place to start with the cursor. Again, see the cursor and press the top left button to begin the next line.

13. Continue to change the shapes and colors until the comic character looks right. Then add the solid black line to create outline, inner and outer contour, shadow and shading.

Summary:

The solid black line has a specific place in the art world of drawing and painting. It can produce all the effects of line that we have learned up to this point in the line unit. Many artists have used the black line as design elements in their paintings. Each painting can be analyzed for use of this line. Roy Lichtenstein used the solid black line in his Pop Art comic paintings.

Homework/Assignment:

To create a comic strip story using the character created in the lesson. The format can be as a frame by frame in which there are many frames on a single screen or each complete picture may be a single frame. The entire comic may consist of two or more frames to convey the story.

Extra:

Create a logo-type advertising piece, which says "NEW" or "IMPROVED" using the solid black line as the design enhancement. The student is to save the drawings on a formatted data disk. The student is to document the drawing by naming it with student's last name and class, and name drawing "Comic". Make a print out.

Note: For ERASERHEADS - There are various ways to erase. You can erase the whole screen by touching the pressure sensitive pad with your finger or the stylus to move the cursor to "ERASE" and follow the instructions by choosing the color you wish the screen to turn to. You can erase a single line by changing the color to the background color and (a) try to recreate the line to be erased with a thicker brush or (b) change the command to "BOX" and "black box" the line area out.

# TOPIC 50: Two-Dimensional Line for Drawing and Designing

Sub Topic: Line Creates Movement, Action and Distance

Performance Objective: Students will be able to:

- employ different types of lines in order to create the effect of specific movement and action
- create the illusion of an object moving
- become familiar with the process of creating one-point perspective in their drawings and paintings
- create a one-point perspective drawing
- identify the Renaissance as the time in art history when perspective was first used in drawing and painting

Aim:

How do lines act in relation to solid objects when they are added to the outside of the object and what effect is created? How do straight diagonal lines create increased interest in a drawing? When was perspective first used in drawing and painting? To enhance pgs. 18, 19, 82, 83 of the NYC high school art curriculum guide.

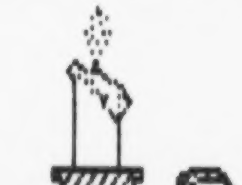
Materials:

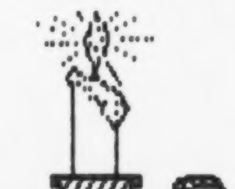
Apple II, II+, IIe, IIc or compatible with 48K bytes, Baudville's Blazing Paddles, or Koalaware's Micro-Illustrator. (If 128K is available, student can use Broderbund"s Dazzle Draw), DOS 3.3 disk drive, Video monitor, a Koalapad touch Tablet or some method of moving the cursor, one formatted diskette per student, one software disk per three students.

Artists - movement - Duchamp, "Nude Descending a Staircase", No.2; - architecture - Leonardo da Vinci, Bramante drawings of St. Peter's Cathedral; Giorgio de Chirico, "The Mathematicians" 1917

Motivation:

With chalk or stylus and Koala pad teacher will draw a candle, and a candle holder if desired, and leave off all lines representing the movement of the light rays from the candle. Teacher will ask a student to do something to make the flame look brighter.

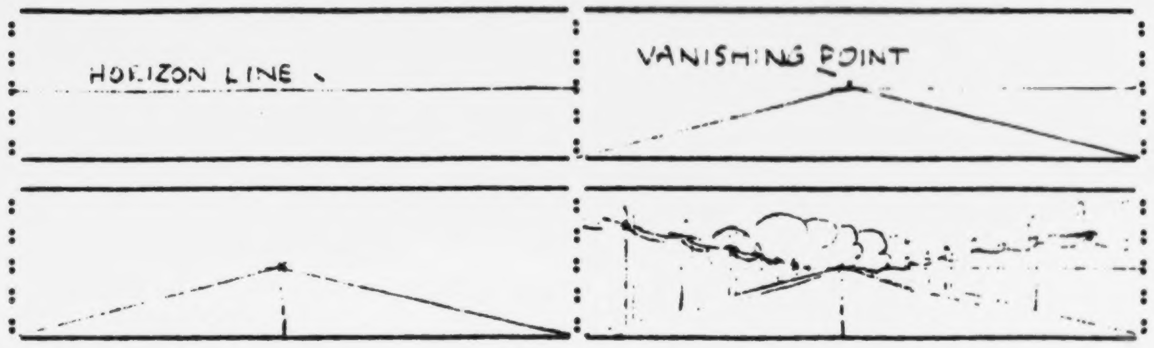




Procedure:

Teacher will call on a student to add the necessary lines in order to brighten the flame. Teacher will advise the students that the flame is hot, and that the drawing is missing the intensity of the candlelight.

1. What can the artist use to create the effect of the light of the candle? (radiating lines from the flame on the candle. The length of the line can represent the intensity of the candlelight.
2. What are some other types of movements or actions that can be created by using lines and their objects? (bouncing a ball, throwing a ball, jumping up and down, waving a hand, direction of a person's view seeing something specific, impact of something hitting another object, movement in time)
3. What types of lines can be used to create the movement effect and what is the effect they create? (radiating lines, solid lines, dotted line, curved line, coils and spirals)
4. What are the radiating lines of the candlelight actually representing? (the movement of light waves in space)
5. We can't we see the lines in space? Why include them as part of the drawing? (the lines are symbolic and are representative)
6. How can we create the illusion of depth and distance in a drawing using line? (by using linear perspective. There are many types of perspective. We will learn the process of creating a one-point perspective drawing.)
7. Open the disk drive door. Hold the diskette with the label end facing you. Insert the diskette with the label facing up into the disk drive and close the door. Now, turn on the monitor and turn on the computer.
8. Follow the directions on the screen using the keys on the keyboard and the palette or main menu will appear on the screen. For this lesson, we will limit the menu to the "LINE" command. We will limit "BRUSH" to the small dot.
9. Let's begin with "DRAW". Place the stylus on the Koala pad and place the cursor on the screen to "DRAW". With your other hand, press the top left button of the Koala Pad. The screen will become a blank page ready for you to draw on. Now, press the stylus onto the pad and see the cursor appear on the blank screen.
10. Continue to press the top left button of the pad and draw with the stylus. To discontinue a line, lift your finger or stylus from the top left button and find a new place to start with the cursor. Again, see the cursor and press the top left button to begin the next line.
11. Each student must follow the teacher model and recreate the one-point perspective drawing as shown step by step below. Note the labels next to specific lines.



12. Begin with the horizon line and then choose the vanishing point. The next lines will be the lines representing a road. Point out that the heights of all additional objects will decrease as the objects appear farther away even though they might all in reality be of the same height, such as lamp posts, or telephone poles.

Summary:

Lines can produce effects which are representational of action, movement and distance despite the stationary character of the still screen. Different types of lines will produce their own effects. Perspective is the illusion of depth and distance. Linear perspective produces this effect with line. One-point perspective is very forceful in leading the eye in a specific direction.

Homework/Assignment:

The student can do three separate objects, adding lines from the two basic groups as the means to symbolize and represent movement related in some way to these objects. A series of five different representations will complete the assignment.

Extra:

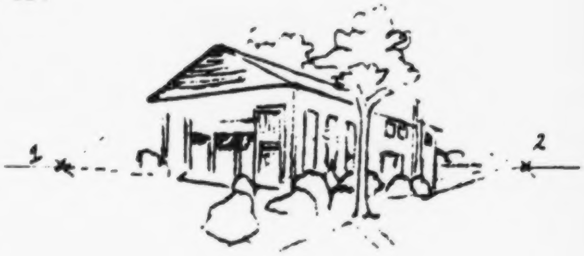
Create the image of a train, person or animal in which the angle of the image itself creates the illusion of action or movement. The student is to save the drawings on a formatted data disk. The student is to document the drawing by naming it with student's last name and class, and name drawings. Save the class exercise as "One pt. perspective" and the assignment as "Movement".

Note: For ERASERHEADS - There are various ways to erase. You can erase the whole screen by touching the pressure sensitive pad with your finger or the stylus to move the cursor to "ERASE" and follow the instructions by choosing the color you wish the screen to turn to. You can erase a single line by changing the color to the background color and (a) try to recreate the line to be erased with a thicker brush or (b) change the command to "BOX and "Black box" the line area out.

## *TOPIC 51: Two-Dimensional Line for Drawing and Designing*

Sub Topic: Two-Point Perspective

Performance Objective: Students will be able to:



- execute directionality - using vertical, horizontal, perpendicular and parallel lines
- create a cityscape using the process of two-point perspective
- discuss the possibilities of the effect of using lines which are not vertical, lines which are not straight, and other devices

Aim:

What is perspective? When was it discovered? How can we capture the solidity of a cityscape? What is the process for creating a two-point perspective drawing? Why is the linear quality of verticality an important element in perspective drawings? What effect can be producd when curve lines are used to create perspective? To enhance pgs. 82 and 83 of the NYC high school art curriculum guide.

Materials:

Apple II, II+, IIe, IIc or compatible with 48K bytes, Baudville's Blazing Paddles, or Koalaware's Micro-Illustrator. (If 128K is available, student can use Broderbund's Dazzle Draw), 3.3 disk drive, Video monitor, a Koalapad Touch Tablet or some method of moving the cursor, one formatted diskette per student one software disk per three students.

Artists - Leonardo da Vinci, Bramante drawings of St. Peter's; de Chirico, "The Mathematicians" 1917.

Motivation:

Teacher will either state or write the following quote, "The two most important requirements for painting are a knowledge of perspective and anatomy."
- Leonardo da Vinci

Procedure:

Artists of the Renaissance, a prime example being the artist and architect Brunelleschi, found a way to make the illusion of distance in a mathematical sense. These artists understood the picture plane as a transparent window through which the observer looks into the pictorial world. The horizon line corresponds to the viewer's eye level, and all perpendicular lines to the picture plane meet on the horizon line. This discovery was made during the Early Renaissance, mid-1400s in Italy. It was a discovery which made looking at the reality of the physical world revolutionary for artists of the Renaissance.

1. We will create a two-point perspective drawing beginning by establishing the two vanishing points.

2. Open the disk drive door. Hold the diskette with the label end facing you. Insert the diskette with the label facing up into the disk drive and close the door. Now, turn on the monitor and turn on the computer.

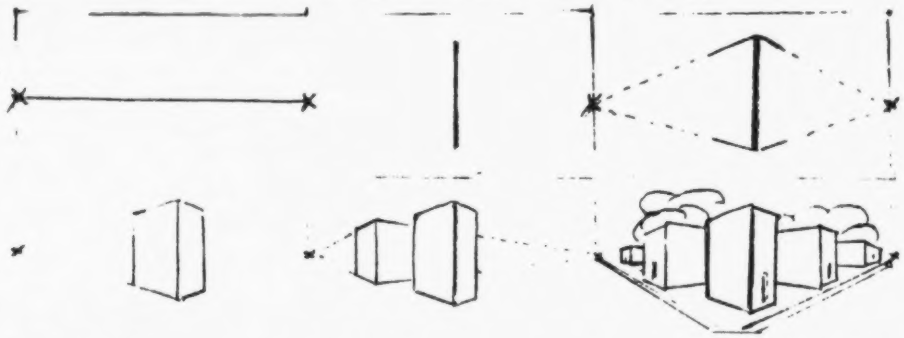
3. Follow the directions on the screen using the keys on the keyboard and the palette or main menu will appear on the screen. For this lesson, we will limit the menu to the "LINE" command. We will limit "BRUSH" to the small dot.

4. Establish the two vanishing points using a horizon line in the "LINE" command. Stay in this command. Produce the horizontal line approximately one third of the way up from the bottom of the screen. Keep the two vanishing points on the extreme right and left of the screen and erase the line except for these two points. (see ERASERHEAD note.)

5. Create the height of the first building either in the center or slightly off center of the screen using a straight vertical line.

6. Ground the building using vertical lines and close the right and left sides of the building.

7. Repeat this process keeping in mind that as the buildings recede or move further away from the picture plane into the background space, the heights of the buildings will diminish or shorten, as in the one-point perspective drawing. Also keep in mind the overlapping effect of one building in front of another. This will intensify the solidity of the buildings. Each student must follow the teacher model and recreate the two-point perspective drawing as shown step by step.



8. What would happen to the effect of the buildings if the vertical lines were not straight, but curved or waved? (the effect would be surrealistic or cartoon-like)

Summary:

Lines can produce effects which are representational of action, movement and distance despite the stationary character of the still screen. Different types of lines will produce their own effects. Perspective is the illusion of depth and distance. Linear perspective produces this effect with line. A comic or surreal effect is produced with a curved line.

Homework/Assignment:

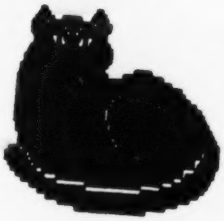
The student will complete the two-point perspective drawing created in class by using different colors and "DRAW" or "FILL" commands to create the effect of the time of day. Use other details such as cars, sidewalk, street lights, doors and windows, etc.

Extra:

Create a quilt square using a two-point perspective design. The student is to save the drawing on a formatted data disk. The student is to document the drawing by naming it with student's last name and class, and name drawings. Save the drawing as "Two pt. perspective".

Note: For ERASERHEADS - There are various ways to erase. You can erase the whole screen by touching the pressure sensitive pad with your finger or the stylus to move the cursor to "ERASE" and follow the instructions by choosing the color you wish the screen to turn. You can erase a single line by changing the color to the background color and (a) try to recreate the line to be erased with a thicker brush or (b) change the command to "BOX" and "black box" the line area out.

## *TOPIC 52: Two-Dimensional Line for Drawing and Designing*



Sub Topic: Negative Line on Positive Space

Performance Objective: Students will be able to:

- identify and define positive and negative
- use positive and negative with the concept of contrast
- create a drawing using negative line

Aim:

What is positive space? How can we create a negative line in a positive space? What principle of design is best illustrated by using positive and negative? Why is it of extreme importance to consider the negative as well as positive in design? To enhance pgs. 6, 30, and 100 of the NYC high school art curriculum guide.

Materials:

Apple II, II+, IIe, IIc or compatible with 48K bytes, Baudiville's Blazing Paddles, or Koalaware's Micro-Illustrator. (If 128K is available, student can use Broderbund's Dazzle Draw), DOS 3.3 disk drive, Video Monitor, a Koalapad Touch Tablet or some method of moving the cursor, one formatted diskette per student, one software disk per three students.

Artists- Robert Rauschenberg, "Erased Drawing"; Claude, "Trees in a Gale."

Motivation:

Teacher draws a line with chalk on the blackboard or with the stylus and Koala pad to demonstrate how to draw a positive line. Teacher then asks students in class how to draw a negative line.

Procedure:

Teacher will call on the student who will attempt to answer the question.

1. What is a negative line? (negative is the impression which is the inverse of another. A negative line is a line which is taken out of a tonal or shaded in area to further define form.)

2. What is the principle of design which relates most to positive and negative? (contrast)

3. What are some ways in which artists use positive and negative space as well as positive and negative line? (drawing and painting, printmaking, textile design, logo design, advertising, photography) Let's create a drawing using negative line.

4. Open the disk drive door. Hold the diskette with the label end facing you. Insert the diskette with the label facing up into the disk drive and close the door. Now, turn on the monitor and turn on the computer.

5. Follow the directions on the screen using the keys on the keyboard and the palette or main menu will appear on the screen. For this lesson, we will use the "DRAW", "OVAL 2" and "BOX 2" commands. We will limit "BRUSH" to the small dot. We will also be changing colors.

6. Let's begin with "OVAL 2". Place the stylus on the Koala pad and place the cursor on the screen to "OVAL 2". With your other hand, press the top left button of the Koala pad. The screen will become a blank page ready for you to draw on. Now, press the stylus onto the pad and see the cursor appear on the blank screen.

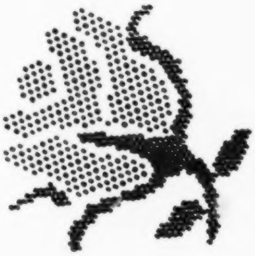
7. Pull the stylus out from the cursor and you will see an oval shape appear. To set the desired oval, press the top left button of the Koala pad. The shape is on the screen and will automatically fill. Press the top left button of the pad to return to the menu.

8. Press the stylus on the pad and see the menu. Set the cursor to "DRAW" command and press top left button. Set the cursor to color and choose the background color (black). Press the top left button again and the shape will again appear. Students will be "erasing" or creating a negative line in their positive shape.

9. Each student must create a dark tone sphere and create the highlight form using negative line.

Summary:

Negative lines are the reverse of another. They are also lines taken out of shaded areas to create form. Many different art disciplines use the principle of contrast which is closely related to positive and negative.



Homework/Assignment:

The student can do three separate objects, or create an entire scene using positive tonal areas and negative line to create form and space.

Extra:

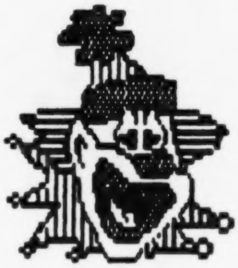
Create a night scene using negative lines to define form and space. The student is to save the drawings on a formatted data disk. The student is to document the drawing by naming it with student's last name and class, and name drawings. Save the class exercise as "Negative Sphere" and the assignment as "Negative Line".

Note: For ERASERHEADS - There are various ways to erase. You can erase the whole screen by touching the pressure sensitive pad with your finger or the stylus to move the cursor to "ERASE" and follow the instructions by choosing the color you wish the screen to turn to. You can erase a single line by changing the color to the background color and (a) try to recreate the line to be erased with a thicker brush or (b) change the command to "BOX" and "black box" the line area out.

# *TOPIC 53: Two-Dimensional Line for Drawing and Designing*

Sub Topic: Line Creates Mood and Conveys Emotion

Performance Objective: Students will be able to:



- associate a specific emotion with a type of line or combination of lines
- use line to create a cartoon face expressing different emotions
- associate mood with specific types of lines
- create a mood drawing using line

Aim:

What makes an artist successful? How does line best express emotion? How can we balance lightness and darkness to enhance the emotional content of a drawing, painting or illustration? How does the viewer receive the mood of a drawing, painting, print or illustration. To enchance pgs. 77, 78, 79, and 82 of the NYC high school art curriculum guide.

Materials:

Apple II, II+, IIe, IIc or compatible with 48K bytes, Baudville's Blazing Paddles, or Koalaware's Micro-Illustrator. (If 148K is available, student can use Broderbund's Dazzle Draw), DOS 3.3 disk drive, Video monitor, a Koalapad Touch Tablet or some method of moving the cursor, one formatted diskette per student, one software disk per three students.

Artists- Edward Munch, "The Scream", 1893; Franz Kline, "Nijinsky", 1950; Goya, "Los Caprichos"; Cuyp, "Dutch Landscape" (calm); Van Gogh, "The Starry Night", 1889.

Motivation:

Teacher gives class the statement, "High art is the greatest form an emotion can take. Artists express and convey their emotions to other people through their art."

Procedure:

Teacher asks what makes an artist successful? (The artists who are truthful with their feelings and can express them in their artwork are the most successful)

1. Let's name a few moods and emotions and the lines associated with each. (Curved line - fantasy, gaiety, fun, happiness, gladness)
    a. downward curve represents sadness
    b. Angle line - anger, turmoil, sadness, hatred
    c. Straight line - ambiguity, non-chalance, lacking emotion)
    d. What mood is created using light lines?
    e. What mood is created using thick dark lines? (depression, gloom, mystery)

2. The use of contrasting lines can create a mixture of mood or emotional content. What is this principle of design? (contrast)

3. Student will use curved lines on portrait's eyebrows and mouth to create different emotions. Student will use angle line on the eyebrows and mouth to create different emotions.

4. Open the disk drive door. Hold the diskette with the label end facing you. Insert the diskette with the label facing up into the disk drive and close the door. Now, turn on the monitor and turn on the computer.

5. Follow the directions on the screen using the keys on the keyboard and the palette or main menu will appear on the screen. For this lesson, we will use the "DRAW and "OVAL" commands. We will limit "BRUSH" to the small dot.

6. Let's begin with "DRAW". Place the stylus on the Koala Pad and place the cursor on the screen to "DRAW". With your other hand, press the top left button of the Koala pad. The screen will become a blank page ready for you to draw on. Now, press the stylus onto the pad and see the cursor appear on the blank screen.

7. Continue to press the top left button and draw with the styulus. Release and press the top left button to return to menu. Press stylus and set cursor to "OVAL". Press the stylus on the screen and pull out to create the shape of the face using oval.

8. To set the desired oval, press the top left button of the Koala pad. The shape is on the screen. Press the top left button of the pad to return to the menu. Press the stylus on the pad and see the menu. Set the cursor to "DRAW" command and press top left button.

9. Each student will create a face showing emotion using three different types of line.

Summary:

An artist is a person who is truthful with his feelings and tries to honestly express those feelings in his art to convey them to other people. Lines are emotion-packed, when used in proper balance and within the proper framework. When a certain type of line dominates a drawing, a certain mood is created. Types of lines can be used to directly express emotion as in facial expressions.

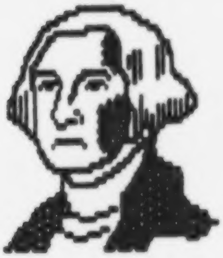
Homework/Assignment:

The student can create a mood scene using a dominant type of line - an emotion packed scene such as an impending storm.

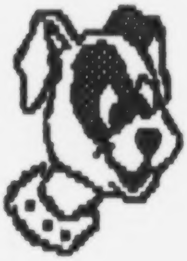
Extra:

Create a fantasy drawing using curvilinear forms and designs. The student is to save the drawings on a formatted data disk. The student is to document the drawing by naming it with student's last name and class, and name drawings. Save the class exercise as "Emotion" and the assignment at "Mood".

Note: For ERASERHEADS - There are various ways to erase. You can erase the whole screen by touching the pressure sensitive pad with your finger or the stylus to move the cursor to "ERASE" and follow the instructions by choosing the color you wish the screen to turn to. You can erase a single line by changing the color to the background color and (a) try to recreate the line to be erased with a thicker brush or (b) change the command to "BOX" and "black box" the line area out.



EMOTIONLESS-
STRAIGHT LINE ON
BROWS AND MOUTH



HAPPY-
CURVE LINE ON EYES
AND MOUTH

# TOPIC 54: How to Draw Curved Lines

Performance Objectives: Students will be able to:

- gain control of the keyboard in order to be able to quickly draw a "free-hand" curving line.
- create drawings with detail that don't depend on the standard design commands

Aim: Since the computer will let us draw only straight lines how can we use it to draw a curved line?

Materials:

- 16 IBM PC computers
- 16 Art Studio disks
- 16 data disks

Motivation:

How does one draw a circle, with a curved line or a straight line?
Show a circle drawn on the computer.
  a) are there any curved lines in this circle?
  b) what kind of lines is this circle made of?

Development:

1. Insert Art Studio disk, turn on computers.

2. Looking at the circle on the demonstration computer examine how the straight lines are linked together to look like a curve.

3. Toggle the grid off.

4. Selecting the sketch command, demonstrate how to make a "curved" line with the use of the four direction arrow keys and the space bar.

5. Analyze which arrow keys you would use most for curves in the horizontal direction; do the same for the vertically directed curves.

6. Have the students practice drawing curves at their own computers.

7. Have them try drawing an object with curved lines such as a plant, or animal.

Summary:

One can make beautiful and graceful detailed drawings using the sketch command on Art Studio. Drawing this way gives a less mechanical look than depending on the design commands.

**Homework Assignment:**

Using pencil and paper, draw a circle using only straight lines.

# TOPIC 55: How to Use Computer Brushes

Performance Objectives: Students will be able to:

- explore the various brushes that Koala PC Design offers
- see what is appropriate to draw for each brush
- get new ideas inspired by the different effects that the brushes produce
- gain control using the brushes

Aim: Does the look of a drawing or painting depend a lot on what kind of brush is used?

Materials:

- 16 IBM PC or IBM XT computers
- 16 Koala pads and stylii, and software disks
- 16 data disks

Motivation:

1. Show the software menu on the demonstration computer.

2. Show prints of drawings, each one made with one of the brushes on the software.

3. Which brush on the menu was used to make which of the prints?

Development:

1. Plug in Koala pads, insert software disks, and turn on the computer.

2. At their own computers have the students experiment with each of the software brushes.

3. Have each student select something simple to draw, and to draw it seven times, each time with a different brush.

4. Print the drawings and decide which brush was best for what was drawn.

5. Think of subjects that the other brushes would be good for.

Summary:

The type of brush one uses greatly influences the way a drawing looks. By giving us various brushes the software offers us the chance to explore this.

Homework Assignment:

Invent ways to get some of the same brush effects without the use of a computer.

## *TOPIC 56: Drawing Forests*

Performance Objectives: Students will be able to:

- discuss the concept of forests
- draw using the forest as a catalyst
- identify and critique paintings that refer to forests

Aim: To understand and interpret through drawing the phenomenology of forests

Materials:

IBM computer
drawing software
still life materials (for models)

Motivation:

What is your conception of a forest? How do you feel about them? What imagery do you relate to? {several students should give their response} then read...

That the deep forest is also called "the quiet earth, because of its immense silence curled in thirty leagues of green" and bids us participate in transcendent quiet and silence. Because the forest rustles, the "curdled" quiet trembles and shutters, it comes to life with countless lives. But these sounds and these movements do not disturb the silence and quietude of the forest.

Poetics of Space p 187

1. What is the writer's feeling about forests?

   Show slides or view at The Metropolitan Museum of Art.

   a. Claude Monet: The Bodmer Oak, Fontainebleau

   b. Henri Rousseau: The Repast of the Lion

   c. Georges Seurat: Forest at Pontauabert

   d. Paul Cezanne: Rocks in the Forest

   e. Camille Corot: A Wheelwright's Yard on the Seine

   f. Theodore Rousseau: The Forest in Winter at Sunset

   g. Gustave Courbet: The Deer

   h. Gustave Courbet: The Young Bather

### Development:

Using your ideal forest image, answer these questions:

1. How does the density of the forest affect the viewer?
2. Where would you place yourself in the forest?
3. Do you feel oppressed, frightened, endangered? Why?
4. Can you determine what time of year it is?
5. What is the relation between this painting and your ideal?

### Assignment:

Using the materials provided, create a still life forest in the classroom, work in small groups of 3 or 4. Place a base of potters clay, into a shoe-box lid, add to this an assortment of rocks, stones, trimmed foliage, tree bark, moss, pine needles, acorns, etc. to create a miniature forest. Place all miniatures together on a central viewing table to create one large forest.

### Using Computer

Draw the forest in any style you desire. Try to show your idea in the work. Some ways may be to use realism, abstraction, cubism, Fauvist techniques, zoom in, worm's view, giant's view.

### Summary:

1. How did the artists we looked at show us forests?
2. Did your drawing show your ideal forest?
3. Which painting appealed most to you? Why?

### Application:

Many people have writtern about forests. Give your feelings on the following:

> Lyrique by Pierre-Jean Jouve.
> Pious forest, shattered forest, where the dead are left lying
> Infinitely closed, dense with pinkish straight old stems
> Infinitely serried, older and greyed
> On the vast, deep, mossy bed, a velvet cry.

## *TOPIC 57: Employing the Use of Metaphors in Drawing*

Performance Objectives: Students will be able to:

- recognize the use of metaphors in art
- create an understandable metaphor, using trees as the subject
- draw landscapes and scenery

Aim: To introduce the concept of metaphor into drawing, using trees as the subject

Materials:

IBM computer
drawing software

Motivation:

Look at the following paintings (for viewing at The Metropolitan Museum of Art, NYC)

1. "The Harvesters," Pieter Breughal, the elder

   the first true landscape. Up until this painting, landscape was used as a backdrop for a central idea or theme. This painting depicts a particular time of year.

   Trees: Using central main tree.

   a. How is the artist using this tree? (shelter, storyteller)

   b. What is the function of the background trees? (boundary)

2. "The Judgement of Paris", Lucas Cranach, the elder

   Mythological painting of Paris, Mercury and three godesses. There is very little depth, and the trees are used as boundaries.

   Main tree: Look at this tree, does it appear masculine or feminine? Why - how? (feminine, shape echoes curves, leans as if listening, spectator. Divides painting in half).

3. "A Woodland Road", Miendert Hobbema

   Passageway into painting - a road

   a. Where are we, as the viewer? (on the road).

   b. What is the function of the trees on the far right? (shelter).

4. "The Oxbow", Thomas Cole

A landscape with self-portrait, main tree is at far left foreground.

a. What has happened to this tree? (hit by lightning). This tree has a sad story to tell, it can relate the experience of the passing storm. We can say this tree is an ORATOR.

b. Continue the same question/information using:

. In The Woods } Asher B. Durand

. The Beaches } " "

. Thanatopsis } " "

Development:

As we looked at various trees and the roles they played, it is easier to see how people can give human qualities to non-human objects. We also tend to view trees as spiritual beings. Some examples of this would be:

Dogon African Sculpture

Axis Mundi - imagery

The following literary pieces refer to trees in different ways.

Poemes Francais, Bachelard, Poetics of Space p. 239

Tree Always in the center
Of all that surrounds it
Tree feasting upon
Heaven's great dome

{One day it will see God
And so to be sure,
It develops its being in roundness
And holds out ripe arms to Him

Tree that perhaps
Thinks innerly
Tree that dominates self
Slowly giving itself
The form that eliminates
Hazards of wind!}

### The Tree

I stood still and was a tree amid the wood,
Knowing the truth of things unseen before;
Of Daphne and laurel abough
And that God-feasting couple old,
That grew elm-oak amid the wood.
'Twas not until the Gods had been
Kindly entreated, and been brought within
Unto the hearth of their heart's home.
That they might do this wonder thing;
Natheless I might have been a tree amid the wood
And many a new thing understood
That was rank folly to my head before.

Ezra Pound

1. What have we been saying about trees in general?
2. When you draw trees, do you ever think of them in roles as we've been doing?
3. Does anyone know what the significance of a hole in a tree has?

### Using the Computer

a. Interpret using drawing on computer.

b. Hand out small cards with the following information:

- Tree as:____________________ .
- Have one for each student, duplicates are okay.
- Tree as:
  - Shelter
  - Boundary
  - Gathering
  - Family
  - Orator
  - Couple
  - Mother and Child

### Summary:

When we work on future drawing or painting what qualities can we add by using methaphoric symbols?

### Application:

This study of trees naturally leads us toward another familiar subject using trees - (forests).

1. How would forests differ from trees?
2. Draft a landscape for a painting that uses trees to tell a story or echo a theme.

Assignment:

Locate some literature that relates to your sketches. Work the imagery into your painting - paste literature to back of work.

## TOPIC 58: How to Create Shape and Form Through Line

Performance Objectives: Students will be able to:

- create a drawing using line mode in programmed software.
- create shape and form through the use of parallel lines that are a) thick and b) closer and further apart.
- to recognize the use of "implied" line in drawing.

Aim: How can "implied line designs" be created with a microcomputer?

Materials

Programmed graphics software which may include Koala pad, Micro Illustrator or other that has "line" option for drawing. A computer system using the keyboard, joystick, graphics tablet or other input device.

Motivation:

What is an "implied" line?

Development:

1. After booting software which may include Koala pad, Micro Illustrator or other that has "line" option for drawing. A computer system using the keyboard, joystick, graphics tablet or other input device.

2. Draw contour line of shape to be drawn on a monitor screen with water based markers that can be washed off.

3. Using line mode and a small brush, start a series of vertical lines from top of monitor screen to edge of drawn shape. Continue parallel lines from bottom edge of contour shape to bottom of monitor screen. The same procedure may be used with parallel horizontal lines from side of monitor screen, or diagonal lines from top left side or top right side of monitor screen.

4. Now select a larger brush dot and draw parallel lines inside of shape "connecting" to parallel lines outside of shape. The lines need not physically touch -- leave a pixel or two of space between the area outside the shape from the area inside the shape to create "implied line".

5. To enhance the form, extra lines may be inserted closer together or between other lines to give feeling of volume. Highlights may be made by eliminating lines.

6. Save drawings including your name as part of name for drawing.

   NOTE: It is recommended that the drawing be saved in stages to prevent starting over if mistakes are made.

Summary:

1. How can the microcomputer assist the graphic artist to create implied line designs?
2. What techniques can be used with the computer that cannot be achieved with more conventional drawing tools?

Assignments:

1. Beginners may create six thumbnail sketches of implied shapes that they feel would be effective as a computer print-out.
2. Advanced students may experiment with the copy command, to lift up the implied shape and use it as a rubber stamp to create a repetitious pattern on the second screen by using the swap command.

## TOPIC 59: How to Create Optical Illusion Through Line

Performance Objectives:

- To learn about Op Art.
- To understand that optical illusions can be created by the relationships of colors, lines and shapes to each other. Some are more dramatic than others.
- To create optical illusion using various options in computer graphics software programs.

- The students will create a design that uses white lines on a black background for contrast and visual movement by repeating a sequence of lines that vary in thickness and distance.

- The students will create another design making shapes inside shapes.

- The students will create a third design combining the first two.

- The student will experiment with color schemes to study relationships and will then select the most vibrant.

Aim: To create abstract illusions, figure ground illusions, repetitious patterns.

Motivation:

Why is the computer an effective tool for creating optical illusions?

Materials:

Hardware: Apple IIe Microcomputer, disk drive, color monitor and printer.
Peripherals: Koala pad and stylii
Software: Koala Micro Illustrator or Dazzle Draw and Apple IIe mouse or Gibson Light Pen.

Development:

1. Refer to available resources to decide the type of design you would like to do. Prepare a sketch.

2. Decide which software (above) would be best to use for making your design.

3. Practice/experiment with the software options.

4. Prepare computer design as planned. SAVE your design. PRINT one copy of your design.

5. Take your design and fill areas with color schemes ( monochromatic, complementary ). Experiment. SAVE one design that seems to have the greatest vibrancy

6. Use markers to color the print-out.

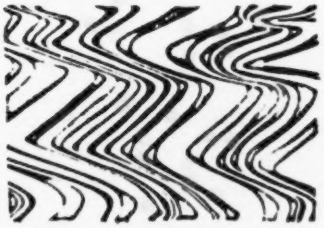
Students will critique each other's work and select the most dramatic designs for display.

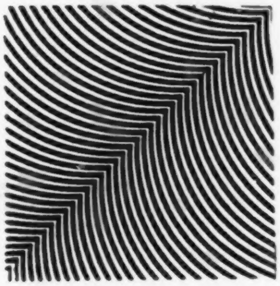
## Assignments:

Beginning students may xerox six copies of their print-out and color each one differently.

More advanced students may want to create their original print-out with a special ribbon that lets them make iron-on transfers. Their designs may then be ironed on a T-shirt at home.

## Useful References





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## *TOPIC 60: Contour*

Performace Objectives: Students will be able to:

- identify contour drawings
- draw from observation
- draw from memory

Aim: To understand contour or outline drawing and execute this on the computer

Materials:

16 IBM computers for 32 students
PC Paintbrush software

Motivation:

Describe these objects in VISUAL language. Use as much description as possible

house key
leafy plant
old shoe
open book
rocking chair
overlapped logs or stack of wood

How aware are you of the actual shape of objects around you? Have a still life set up in the computer room where all students can see it and work from it. There should be several interesting overlapping objects with common and unusual contours.

Development:

Refer to page 8 and 9, "Introductory Art in the High School"

Although we have discussed and used detail and texture in our designs, we will now work only with edges. We will also be drawing in two ways.

1. What do we call it when you draw from an object that you are looking at? (drawing from observation)
2. What would the opposite of that be called, if the item is not in sight? (drawing from memory)
3. Can we have a complete drawing if we only show the outline of the objects? Why?

When you draw from memory, you are depending upon your ability to recall shapes and relationships between objects.

## COMPUTER EXERCISE PART I

Draw any item found in your pocket or purse without taking it out to look at. (memory)

Take the item out once you have finished and compare the actual to your drawing. How do they compare? How good is your ability to recall something?

## COMPUTER EXERCISE PART II

Using the computer and the still life set up in the room, draw the contour of the items, using line only. Be very aware of spacial relationships and placement of the items. Move about from item to item without adding details. You may only have a vague outline on your screen.

Summary:

1. What is a contour drawing?
2. What are the two ways of drawing we explored?
3. Describe the technique of drawing from observation.

Application:

When drawing we are often tempted to add lots of details and extras before we have really studied the outline and shape of the objects we are drawing. To test our skill at observation and recall we can do several exercises. Some of these include:

1. drawing from memory
2. drawing from observation
3. making several small study sketches before you begin a large drawing
4. experimenting with crop and enlarge techniques to add variety

Assignment:

Using line only, follow the contour of several items and bring them to class. Write on the back what the item is. We will discuss the techniques used and the overall effectiveness of the drawing.

# *TOPIC 61: Depth and Perception*

Performance Objectives: Students will be able to:

- use lines to create visual illusions
- create spacial depth in their work
- discover the effects of verticals, horizontals and angles

Aim: Explore the ways we can create unusual perceptual effects using lines.

Materials:

16 IBM computers for 32 students
PC Paintbrush software

Motivation:

Examine the use of line and dot in various art forms. Include advertisements, calligraphy, cave dwelling drawings, Oriental brush paintings, etchings, illustrations and woodcuts.

| | |
|---|---|
| Ch'a Shih-Piao | - Spring |
| Seurat | - Cafe Concert |
| Jackson Pollack | - Autumn Rhythm |
| | - Number One |
| Pablo Picasso | - Seated Woman |
| Piet Mondrian | - Composition in Black, White and Red |
| | - Broadway Boogie Woogie |
| Vincent Van Gogh | - Cypress Landscape |
| | - Road with Poplars |

Development:

1. How is texture and pattern created by line or dots in the works of Picasso and Seurat?

2. How does Mondrian use measurement to organize line and spacial relationships?

3. What is the role of lines in commercial advertisements?

4. In what ways do lines express emotion, look at the work of Cezanne, Mary Cassatt and Vincent Van Gogh.

Computer Work;

a. Experiment with lines: try to create the following combinations to achieve depth and perceptual effects.

   vertical lines appear longer than horizontal lines of the same length.

- diagonal lines moving outward from a horizontal make the horizontal appear longer than the same line with inward diagonals (Muller-Lyer illusion)

- converging lines create the illusion of distance; lines of equal length, flanked by unequal pairs of darker lines, appear to be unequal in length.

- equal diagonal or oblique lines attached to a baseline appear to be unequal in length if the angles they form with the baseline are unequal.

- items of equal height appear to be unequal when plaaced in different locations on a system of converging lines.

- the sides of a square superimposed on a pattern of concentric circles appear to bow toward the center of the figure.

- straight lines superimposed on a pattern of diagonal lines appear to be distorted.

- space divided by lines appears to be smaller than space that is unlined.

Application:

The effects of lines and line combinations such as those described can be used create the illusion of depth or three-dimensional space. Discuss how several patterns created a sense of depth or dimensional space.

Can you think of several reasons the artist would use these techniques when working on a composition? Which ones have you used? What were you drawing?

Summary:

What visual effects have you created using lines? Can you name several types of art that use line illusions as the main theme of the work? How does sculpture use the same line illusions as drawing?

Assignment:

Using line designs draw one or several designs on paper and fill in using color if desired. Make an original optical design.

## TOPIC 62: The Role of the Line

Performance Objectives: Students will be able to:

- identify the basic elements of design
- distinguish different types of lines
- draw using the personal computer

Aim: What is the role of the line in art?

Materials:

- 16 IBM personal computers
- PC Paintbrush software
- class notes THE COMPUTER STEP BY STEP (see appendix)

Motivation:

Look at the work of several artists, such as Piet Mondrian and Paul Klee; also look at sculpture and architecture and furniture designs.

Development:

Refer to page 6, "Introductory Art in High School"

In order to begin any type of art there are certain basic elements of design we must consider. Stop for a moment and think of all the things you must do when you begin to plan a work of art.

(questions and expected answers)

1. Would someone tell me what they think the basic elements of design are? (color, space, shape, form)

2. Someone mentioned shape, what must we do to show the shape, or CONTOUR, of an item? (draw around it)

3. How would you do that, draw around it? (you just do it, take a pencil or something and draw the lines around the thing you are looking at)

4. What you are saying then is if I want to draw something say this, (show object of your choice), I would just draw the lines around it, is that right?

5. What would the most basic element of design be, if we hold to your theory of drawing? (Lines)

6. Look around the room. How many different types of lines can you see? (straight, curved, wavy, thick, thin, colored or jumpy.)

### Summary:

What have we discovered about the use of lines in our designs?
How can we add variety to our lines?
We have looked into the world of the artist by exploring one small area, the use of the line.
There are several areas yet to cover, and in each we will build upon the line.

### Application:

Using the software PC Paintbrush, draw several lines of various thickness, and give each a different character by going from straight to wavy etc. Let your hand flow and let the lines form the design. You may elect to change colors or patterns as you go to add interest.

### Assignment:

Using string or yarn or any length of fibre that is continuous, and using a small tube of white glue do the following: On large paper trace with the yarn the lines formed by several objects. Do not break the line you are doing. Make a small bend in the yard and follow the line of the new item. Glue down the yarn on the paper and bring the design formed by the yarn to class.

# *TOPIC 63: Two-Point or Angular Perspective*

Performance Objectives - Students will be able to:

- understand the principles of two-point perspective
- learn the vocabulary used
- recognize pictures in two-point perspective
- draw blocks in two-point perspective

Aim: To Apply the Principles of Two-Point Perspective to Architectural and Interior Design Drawings, Using the IBM PC with Appropriate Software.

Materials

- hardware: one IBM PC for every two students
- software: "Delta Draw" by Spinnaker; "IBM Drawing Assistant" by IBM PC software; or any other draw program with the same capabilities
- paper, felt-tip pen, thin plastic and tape or Saran wrap

Motivation

A large photograph of a building (from a newspaper or magazine) is taped to the front board. The corner edge of the building is facing the observer. The students are then asked to list optical illusions in the picture. These should include: the apparent converging of both sides of the building to a right or left vanishing point on the horizon. All the horizontal lines are converging, and the vertical lines of the windows seem closer together in the distance.

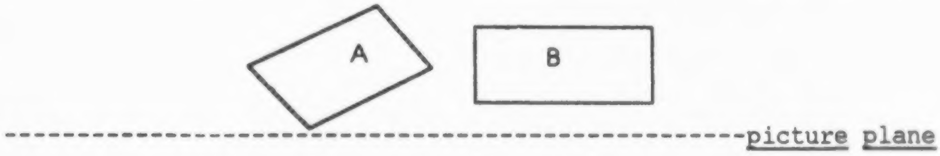
Development

1. By drawing on the board, the teacher continues the converging lines to both vanishing points, and adds the eye level line.

2. The teacher then draws the Top View of the building in the picture, in relation to the Picture Plane, which is defined as an imaginary pane of glass facing the observer directly in front of the picture.

3. The teacher then adds the top view of a block in one-point perspective.

   A - top view of two-point block        B - top view of one-point block



4. The teacher then draws a rectangle and introduces the term "elevation" or side view. Accurate measurements can be made from both top views and elevations.

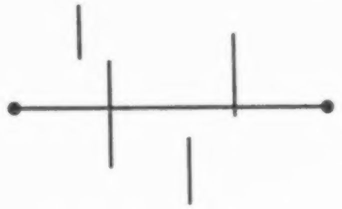
* (This lesson must come after the lesson in one-perspective)

## Summary

In Two-Point Perspective, no surface is facing the observer, all surfaces are receding and all horizontal lines of each surface appear to converge to a left or right vanishing point on eye level.

## Worksessions

1. Students are to draw the corner vertical edges of four blocks as follows: one above, one below, one through eye level and one on eye level.
2. The horizon line is drawn and the two vanishing points are located at the ends of this line.



3. From the top and bottom of each vertical edge line, draw lines to each vanishing point.
4. Add vertical lines to complete sides.
5. For tops and bottoms, draw lines from far corners to opposite vanishing points. They will intersect at the back corner of the top or bottom.
6. With a felt-tip pen, trace the picture onto the plastic or Saran, using only those lines which represent the real edges of the objects, and not the guide lines.
7. Press the Saran or tape the plastice to the screen of the monitor and turn it on.
8. The machines should have been loaded with the "Delta Draw" program in advance. This is done by inserting the diskette into the computer, turning it on, and when the screen fills with letters hit any key, and the arrow will appear. Once this done, students can begin to trace the lines of their pictures onto the screen.
9. Students begin with the following keyboard commands:

D - draws line in direction of arrow, a 10 unit move
M - moves arrow without drawing a line, a 10 unit move
L - turns arrow to the left at 30 degrees
R - turns arrow to the right at 30 degrees
U - a "U" turn of 180 degrees

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⇧ and D - draws line 5 units long
.. M - moves arrow 5 units
.. L - left turn at 15 degrees
.. R - right turn at 15 degrees

CTRL D - draws line 1 unit
M - moves arrow 1 unit
L - turns arrow left 1 degree
R - turns arrow right 1 degree

E - erase backwards from last move
CTRL E - clears screen
CTRL W - changes line width
ALT and any letter or number draws letter or number on screen
CTRL Break - exit from program
ESC - escape
CTRL S - save pictures and gives access to picture files

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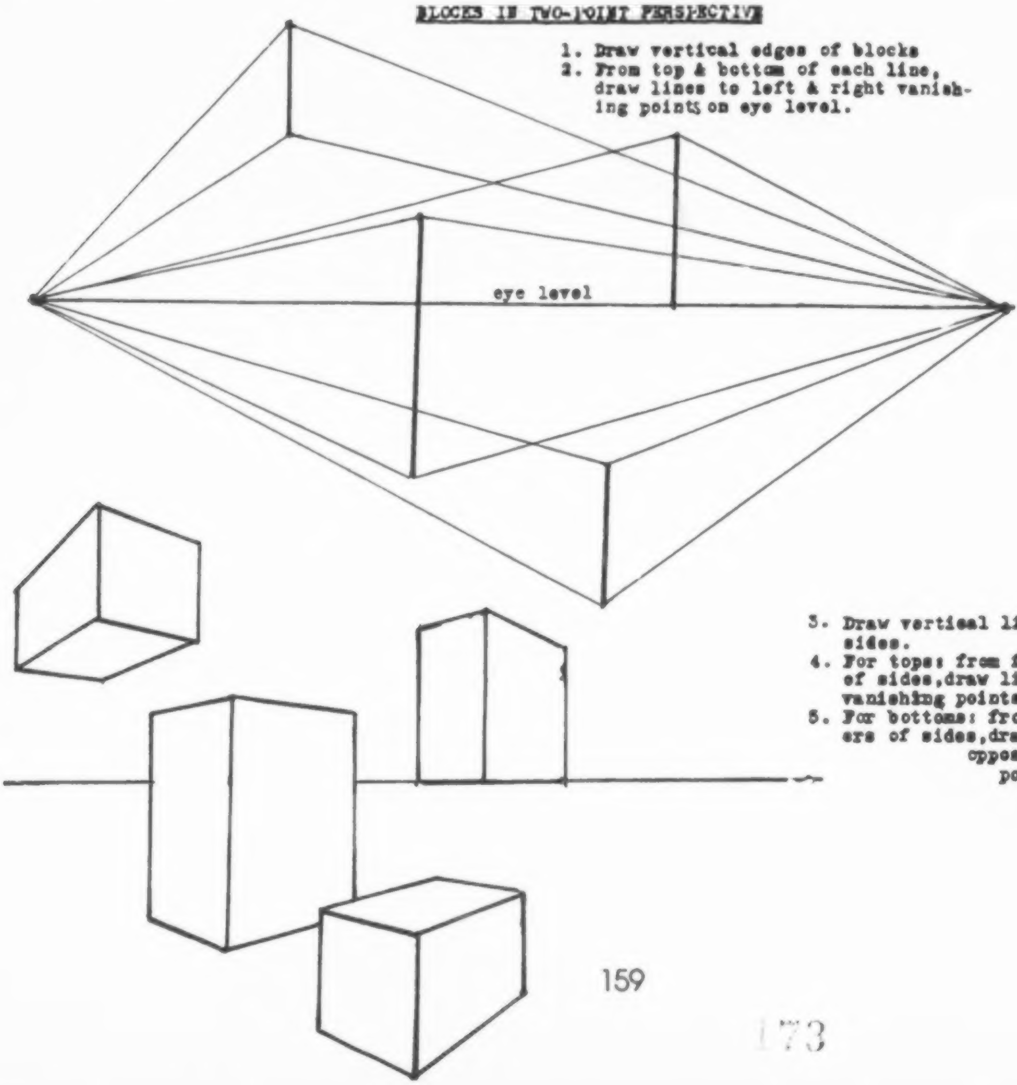
10. Color

C - color of arrow (white, magenta, light blue)
CTRL C - changes intensity or brightness of colors
CTRL B - draws in background color
CTRL F - fill closed area with arrow color
B - changes background color
Y - adds or deletes yellow from colors

11. Drawings may be saved on a file disk, but they cannot be accessed unless the Delta Draw program disk is loaded into the machine.

BLOCKS IN TWO-POINT PERSPECTIVE



1. Draw vertical edges of blocks
2. From top & bottom of each line, draw lines to left & right vanishing points on eye level.
3. Draw vertical lines to complete sides.
4. For tops: from far upper corners of sides, draw lines to opposite vanishing points.
5. For bottoms: from far lower corners of sides, draw lines to opposite vanishing points.

## *TOPIC 64: Drawing Circles With Delta Draw*

Performance Objectives: Students will be able to:

- quickly and simply make circles and other curved shapes when the circle command isn't available to make them for you

Aim: Is there a simple way to draw a circle on the Delta software which has no circle command? How do we do it "manually"?

Materials:

- 16 Computers, Apple II, IIc, or IIe, IBM PC or IBM PCjr
- 16 Delta Draw disks
- 16 data disks

Motivation:

Can anyone figure out how to make a circle using Delta Draw?

Development:

1. Insert Delta Draw disk and turn on the computer.

2. After the students have been drawing for a few minutes ask if anyone can figure out how to make a circle.

3. Have the students save their attempts.

4. Show the various attempts on the demonstration computer and compare them to a print-out of a circle made on Delta.

5. Have the student who came the closest demonstrate how he did it.

6. If it's still not exactly right demonstrate using the following keys: D-R-D-R-D-R-D etc. until the circle is closed. You can enlarge the circle by typing in DD or DDD, or DDDD and so on and then typing in R or L.

7. Have the students practice at their own computers.

Summary:

It's important to be able to find simple ways to draw basic shapes if they are not provided by the software commands. This gives versatility in drawing.

Homework Assignment:

Try to figure out what keys you would press to make an eclipse. When you get to school, try it!

## TOPIC 65: Turning a Two-Dimensional Shape Into a Three-Dimensional Shape

Performance Objectives: Students will be able to:

- use the "radial line" tool to easily make 2-D shapes into 3-D shapes
- get a feeling for perspective from this method
- draw 3D shapes at different angles

Aim: How can we make a two-dimensional shape into a three-dimensional shape?

Materials:

- 16 IBM PC computers
- 16 Art Studio software disks
- 16 data disks

Motivation:

Draw a square on a demonstration computer. Select "radial line" command and draw its placement point a few inches away and slightly above the square. Have a student connect radiating lines to all the corners of the square.

a) what happened to the square?
b) how is it different now?
c) why does it look three-dimensional; Why not before?
d) why do the sides "get smaller" as they go back in space?

Development:

1. Insert software disks and turn on the computer.

2. At their own computers have the students draw various geometric shapes, (they can later try amorphic shapes) and use "radial line" to make them three-dimensional at various angles.

3. How would the shapes look if seen from above, below, and from the right and left?

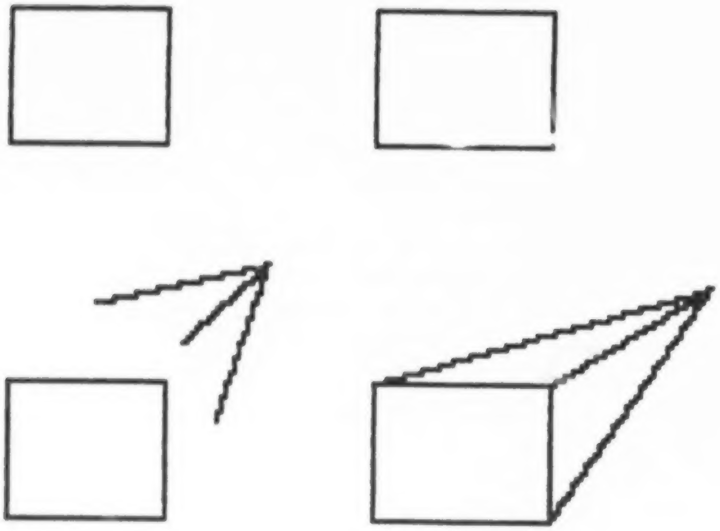
4. Have them transform various two-dimensional shapes into recognizable three-dimensional objects.

Summary:

"Radial line" tool is excellent for teaching the principles of perspective. This lesson can be used as a springboard for teaching the various point perspectives.

Homework Assignment:

Sit at an angle from your T.V. set and draw it from the perspective at which you see it. First draw the screen and then the side or sides that you see. Imagine an imaginary "radial line" tool. Does this make it easier?



## *TOPIC 66: Adding Glaze to Shapes*

Performance Objectives: Students will be able to:

- learn what glazing is and how it affects something visually
- learn how to "glaze" on the computer
- use glazing as a tool in representational and non-representational work

Aim: What makes something look mysterious? How does veiling affect the appearance of an object? How does glazing affect the appearance of an object?

Materials:

- 16 IBM PC computers
- 16 Art Studio software disks
- 16 data disks, color printers

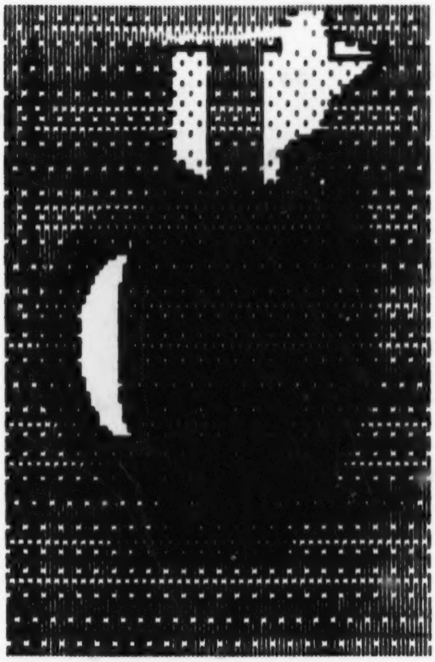
Motivation:

Ask for a volunteer to stand in front of the class. Give him or her several cloths of various transparancies and thicknesses.

a) what would you do to make yourself look very mysterious? a little mysterious?
b) how can we apply what we just saw in creating mystery in our art work?

Development:

1. Insert software disks and turn on the computer.
2. Review the "cut and paste" tool if necessary.
3. Draw a medium-size box and fill it with one of the less dense patterns on the menu.
4. Draw a simple object smaller than the box a few inches away.
5. Use the "cut and paste" tool to copy the patterned box and overlay it on top of the simple object.
6. Toggle off the grid on the screen, and try overlaying the patterned box several times on the object. Shift the position of the box each time to build up a veil of various densities.
7. Have the students practice this at their own computers.
8. Try glazing with different patterns and colors.
9. Create a drawing or design with glazing in mind.
10. Print your favorite glazed work.



**Summary**:

Computer software should be exploited to the fullest to produce visual effects and nuances just like any other plastic art medium.

**Special Assignment**:

Fill the computer screen with one of the less dense patterns on the menu. Save to disk. Select a print of one of your computer drawings or designs that may look interesting with a veil or texture over it. Load the print in the color printer and load your saved texture on the computer screen.

Print the texture over the drawing. You may do it several times to gradually thicken the "glaze" each time shifting the position of the print slightly to print in a different position.

## TOPIC 67: Moving Shapes in a Composition

Performance Objectives: Students will be able to:

- learn how something such as a dream or story or picture can have meaning even if it doesn"t make sense in the ordinary sense of the word
- gain a general understanding of the surrealistic movement in art
- change the meaning of a picture by changing the position of picture elements
- gain control of the "cut and paste" tool
- turn an ordinary picure element into a symbol

Aim: Does something have to make sense to have meaning?

Materials:

- 16 IBM PC computers
- 16 Art Studio software disks
- 16 data disks, black and white or color printers

Motivation:

Show reproduction of Salvador Dali's "The Persistance of Memory."
a) are these clocks in an ordinary setting where you would expect to find clocks? How is it different?
b) what meaning can you find in clocks being in a desolate wilderness
c) what meaning do you find in melting clocks
d) how does the title of the painting relate to your own associations

Development:

1. Insert software disks and turn on the computer.

2. Gather around a demonstration computer.

3. Display a student's picture.

4. Have the student select one of the picture elements and move it to an unexpected location with the use of the "cut and paste" tool.

5. Does the meaning of the picture change? How?

6. Load the original drawing and try moving the same element to another spot?

7. How does the meaning change now?

8. At their own computers have the students experiment with this idea using some of the drawings they have saved.

9. Have them select a few variations and print them. Compare.

Summary:

Because the computer can copy picture elements and move them easily, variations of drawings can be easily made. This is good for exploring meaning and symbolism and content of work as well as the visual design of a picture.

Homework Assignment:

Sit in your favorite room or go to your favorite outdoor spot. Imagine moving something there to a new position. Imagine moving something there that wasn't there before. How does this change the feeling of the place? Does it give the place new meaning. If you want to, draw a picture about your ideas.

## TOPIC 68: How to Draw in the "Cubist" Style

Performance Objectives: Students will be able to:

- learn about some of the ideas underlying the Cubist Movement
- learn unusual ways to create "space" in a picture
- become visually sensitive to different kinds of space in a picture
- gain control of "cut and paste" tool

Aim: Can we draw something so it looks like we're seeing it from several different angles at once?

Materials:

- 16 IBM PC Computers
- 16 software disks
- 16 data disks

Motivation:

Show reproduction of painting "Still Life: Le Jour", by George Braque.
a) what is unusual about this picture?
b) what is unusual about the guitar?
c) why is the guitar broken?
d) which side of the guitar looks like its closer to you?
e) does the break in the guitar create more space than if the guitar wasn't broken?
f) in fact, do things that are broken but that have all their broken parts, take up more space than unbroken things? Why?
g) so, is this picture showing us something about reality that perhaps we never thought about before?

Development:

1. Insert disks and turn on computer.

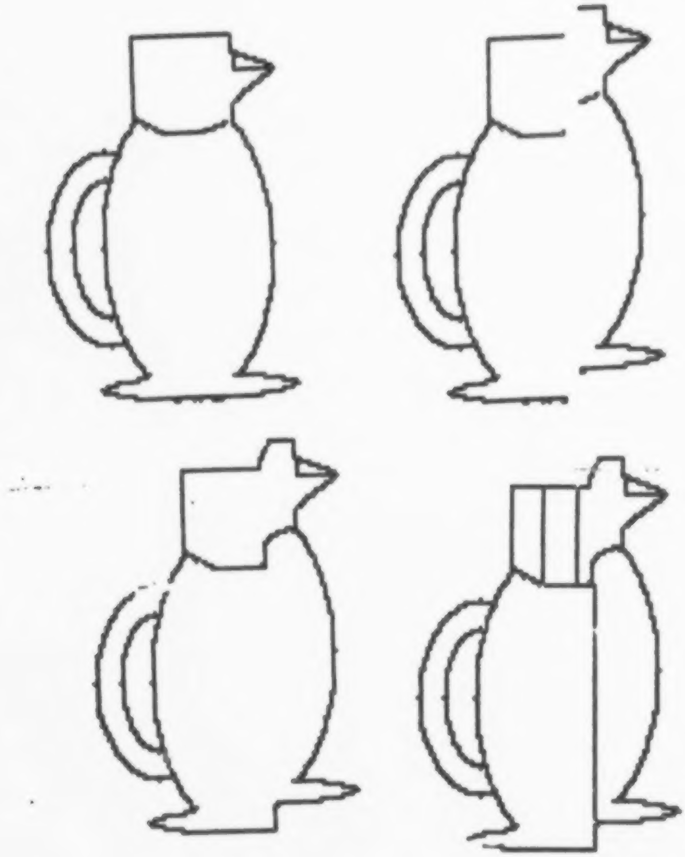
2. Gather around a demonstration computer.

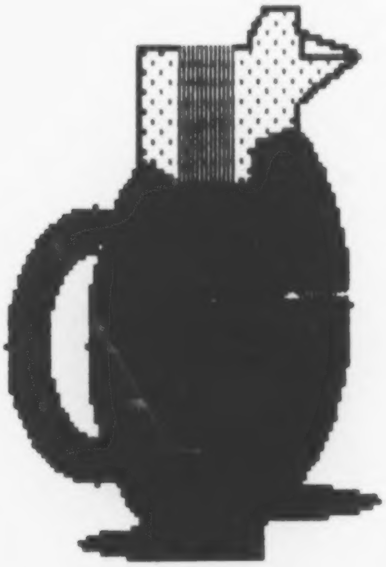
3. Draw a simple representational object such as a bottle.

4. Using the "cut and paste" tool, divide the object in two and shift one section slightly down and side in either direction. Use the "move and replace" selection selection to accomplish this.

5. Connect the split portions of the object with right angle lines. Make lines go all the way up the boundry between the split.

6. Use color to fill in the parts. Color the section that comes closest to you with a color that contrasts a lot from the background. This will enhance the spacial effect. Parts that don't come forward can be filled with less contrasting colors.





7. Have the students go through this process at their own computers, each starting with an object of his choice.

8. Save in between each step.

9. Create a whole picture based on this cubist spacial idea.

Summary:

Breaking up an object and reconnecting the parts in their new positions is like looking at an object from several view points at once. Each break in its own position would represent a new position of the viewer.

Homework Assignment:

Make a cubist sculpture from an apple cut in sections of different sizes.

## TOPIC 69: How to Blend Colors on the Computer

Performance Objectives: Students will be able to:

- become more aware of light and shadow
- learn to model and blend tones on the computer
- gain control of "airbrush" tool

Aim: Do shadows and highlights have sharp bounderies? How do we know where they begin and end?

Materials:

- 16 IBM PC computers
- 16 Art Studio software disks
- 16 data disks

Motivation:

Set up a simple still-life with objects that have a middle gray value. Arrange lighting so that shadows and highlights are clear.
a) Who can tell me where this shadow starts?
b) If I don't know, how can I draw this?
c) How do I solve this problem?

Development:

1. Insert software disks and turn on computer

2. Gather around a demonstration computer

3. Review "airbrush" tool if necessary

4. "Airbrush" makes layers of texture according to the size of the brush and the density of the placement. Demonstrate how to blend a tone going from lighter to darker by applying more layers of airbrush or decreasing the size of the brush in the darker areas.

5. Emphasize the importance of getting gradual gradations.

6. Point out that the reason we don't know exactly where a shadow begins is because of the gradualness of the gradations.

7. Show how we make highlights in the same manner as the shadows except we use a lighter color than the tone of the object. We add more layers or decrease the size of the brush where we want the lighter areas.

8. At their own computers, have the students draw the objects in the still-life, (perhaps start with only one object) and fill the objects with a middle-toned color.

9. Use dark and light colored airbrushes to blend the shadows and highlights.

## Summary:

Using the "airbrush" tool to blend shadows and hightlights is comparable to working with charcoal to do the same thing. It does not produce the hard edge look or machine-like blending that is often associated with computer graphics.

## Special Assignment:

Fill the computer screen with a middle-tone color. Select something to draw that has clear shadows and highlights. Don't draw the outline of the object. Select "airbrush" and begin right away to blend the shadows and highlights. Pay attention to the shape of the shadows and highlights. When you finish, see if you can recognize the object even though there are no clear outlines.

# *TOPIC 70: Using Shape Tools With Art Studio Software*

Performance Objectives: Students will be able to:

- create a representational image using geometric shapes
- creatively use the shape tools offered by the software

Aim: Using the computer keyboard, what is an alternative way of picture-making other than drawing pixel by pixel? How can we use the software shape tools to help us?

Materials:

- the Art Studio software
- data disk
- compatible computer and printer

Motivation:

Is it possible to draw something realistically, using geometric shapes?

Development:

1. Discuss and demonstrate using geometric shapes instead of free-hand line to draw. Look at an object together and on the blackboard. Draw it using shapes. Show how it can be done in more than one way. Have the students try it.

2. Group around a demonstration computer and show the Used Car Lot drawing that comes with the software. Have the students name the software tools that were used to create different parts of the picture.

3. At their own computers, have the students create their own drawing using the following tools: circle, concentric circle, box, concentric box, arc, eclipse, angle line, and radiating line.

5. Print drawings.

Summary:

1. By using the various shape tools that the Art Studio provides the students can easily create complex drawings with the keyboard without drawing pixel by pixel.

2. Using the tools to draw lets students draw easily even if they don't have a mouse or graphics tablet.

3. Also, drawing with geometric shapes makes the students aware of how things are made up of basic shapes, and thus helps them to see in a new way.

Homework Assignment:

1. Draw someone or something at home, using geometric shapes.

2. Don't draw from memory; look at what you're drawing.

# TEXTURE

## TOPIC 71: Texture, Its Use in Composition, Layout and Spacial Relationships

Performance Objectives: Students will be able to:

- create texture within a two-dimensional picture plane
- place and design texture within a two-dimensional picture plane
- use two-dimensional design techniques to organize a page layout
- use three-dimensional spacial illusion techniques to portray texture within a give space

Aim: The student will create a computer generated design which will solve one of the following two projected problems:

a) create a design in which you will use surface texture as well as balanced visually exciting two-dimensional page layouts. (wallpaper design, party goods design, shopping bag design, etc.)

b) create a design in which you will use surface texture with its observed changes of detail to depict on illusion of three-dimensional space. (e.g. tree limbs. and branches reaching out into the distance.)

Materials:

- IBM PC
- disk drive and floppy diskette
- video monitor
- printer
- device for controlling the use of the selected software (keyboard, mouse, digitizing tablet (Koala Pad), light pen)
- software such as Delta Draw, P.C. Paintbrush
- drawing pad, pencil

Motivation:

1. Show examples of textured graphic designs which are twodimensional in nature such as:
   a) department store shopping bags
   b) record jacket designs
   c) paper and party goods design
   d) wallpaper designs
   e) textile designs

2. Show photographic examples of how texture is rendered in space from near to far.

3. Show pen and ink and textural line engravings by Durer (or woodcuts).

Development:

1. How is texture used graphically within a flat two-dimensional design?

2. How does texture alter with visual distance in illusionistic three-dimensional rendering?

3. The student will select one of the two projected problems of this texture design project.

4. The student will then begin to work upon a particular idea which pertains to one of the projected problems.

5. The student will begin thumbnail sketches.

6. Demonstrations:
    a) boot up the software
    b) demonstrate the use of the Koala pad for drawing transferral to computer language.
    c) demonstrate save and retrieve functions

7. Procedure:
    a) Student creates sketch for selected project
    b) Student boots up software
    c) Begin transfer of sketch to computer with Koala pad
    d) Save working drawing
    e) Retrieve working drawing and print hard copy
    f) Draw into hard copy for alterations and additions
    g) Edit drawing
    h) Continue procedure to completion of either project
    i) Save the final drawing
    j) Print out hard copy of the final solution of the projected problem for presentation

8. The projected time for completion of this texture project will be four to five class periods.

Summary:

The student will use computer generated graphics to enhance the concepts of basic design and texture which are discussed on pages 6 and 7 of the "Introductory Art in the High School" curriculum guide of the Board of Education of the City of New York. The student will create a design which uses texture either as a graphically designed two-dimensional solution or as another way to help describe the illusion of three-dimensional form and space.

Assignment:

1. Collect and bring to class a series of ten examples of good graphically designed textural surfaces.

2. Collect and bring to class illustrations and/or reproductions of photographs which uses texture to describe space.

3. Create a preliminary sketch of your idea for a creative solution to the projected problem.

## *TOPIC 72: Two-Dimensional Line for Drawing and Designing*

Sub Topic: Line as Texture and Textile pattern

Performance Objective: Students will be able to:

- define texture
- employ different types of line in order to create the effect of textures either natural or man-made
- define textile
- employ line to create textile designs

Reference to texture such as tree bark, leaves and patterns such as brick design, tile design, fabric design

Aim:

What is texture? How can we use line in patterns to create textural effects? What are some different textures we can create? How does the nature of the texture create a thematic effect? To enhance pgs. 7, 100 and 101 of the NYC high school art curriculum guide.

Materials:

Apple II, II+, IIe, IIc or compatible with 48K bytes, Baudville's Blazing Paddles, or Koalaware's Micro-Illustrator. (If 128K is available, student can use Broderbund's Dazzle Draw), DOS 3.3 disk drive, video Monitor, a Koalapad Touch Tablet or some method of moving the cursor, one formatted diskette per student, one software disk per three students.

Motivation:

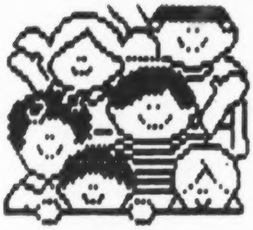
Teacher asks students to look around the room and find something which has texture or designed to have texture. (Look for wood grains, such as paneling.) Ask students to look around the room to find a second thing which has a textile design. (a designed clothing fabric)

Procedure:

1. What is texture? (texture is the roughness or smoothness of a surface of a painting, or in other words the structure of the surface of a painting or sculpture. Texture is also the representation of a visual surface, such as the fur of a cat, the bark of a tree, wood grain of a post, veins of a leaf)

2. What happens when an artist stylizes the designs of these textures? By stylize we mean to create the design in a more decorative way, rather than a realistic way. (the texture becomes decorative and is the basis for textile designs.)

3. What is textile design? (textile design is the design used to create a fabric pattern, or the arrangement of the treads of a woven fabric.)

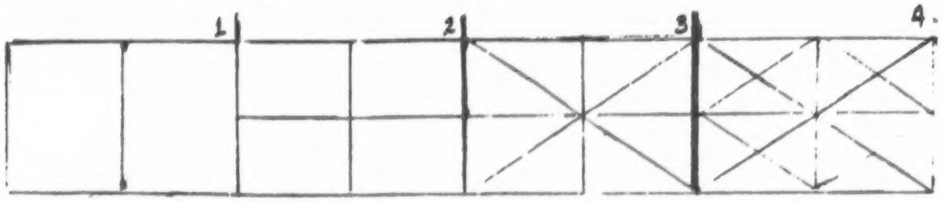


4. What type of line have we learned about which was used historically during the early 1900's and can also be used for textile design? (Art Nouveau line)

5. What other basic lines can we use to create textile design? (diagonal, stripes, zigzag, random, grid for checkerboard)

6. How can we use the principle of repetition and the principle of balance to create textile design? And what space becomes important to the design when a design is repeated? (repetition will create an overall pattern to cover an entire area of fabric. When the design is repeated, the background space or the negative space begins to create its own designs which contrast and complement the positive design)

7. Each student must follow the teacher model and recreate a symmetrical square design as shown step by step below.



8. Open the disk drive door. Hold the diskette with the label end facing you. Insert the diskette with the label facing up into the disk drive and close the door. Now, turn on the monitor and turn on the computer.

9. Follow the directions on the screen using the keys on the keyboard and the palette or main menu will appear on the screen. For this lesson, we will limit the menu to the "LINE" command. We will limit "BRUSH" to the small dot.

10. Let's begin with "LINE". Place the stylus on the Koala Pad and place the cursor on the screen to "LINE". with your other hand, press the top left button of the Koala pad. The screen will become a blank page ready for you to draw. Now, press the stylus onto the pad and see the cursor appear on the blank screen.

11. Move the stylus around the screen until you have gotten to the end of your line. To make the line stick, press the top left button on the Koala pad and find a new place to start with the cursor. Again, see the cursor and press the top left button to begin the next line.

12. Student creates the design as outlined by the teacher. Student on Blazing Paddles can then use the "WINDOW" command to "cut" the design and "paste" it to cover the area of the screen area as would be the fabric design, using the negative space in a creative way.

### Summary:

Texture, the surface or structural roughtness or smoothness can be represented using line. Textile design is the use of stylized textures as well as creative designs to create the patterns for fabric, wallpaper, tile, and other coverings. Artists use the principles of balance and repetition to create successful designs.

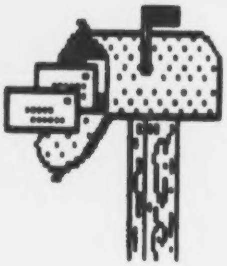
### Homework/Assignment:

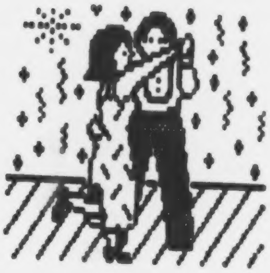
The student can create a representation of five different textures using line. Teacher may suggest certain textures using line. Teacher may suggest certain textures by repeating those given by the students during the lesson.

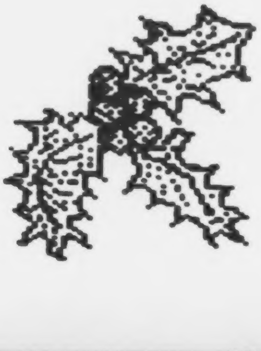
### Extra:

Create a pattern that a bricklayer can use to decorate the outside of a brick house. The bricks must be in a rectangular shape, however to give accents, the brick may also be used cut in half. Students are to save their drawings on a formatted data disk. The student is to document the drawing by naming it with student's last name and class, and name drawings. Save the class exercise as "Symmetrical Square" and the assignment as "Texture".

Note: For ERASERHEADS - There are various ways to erase. You can erase the whole screen by touching the pressure sensitive pad with your finger or the stylus to move the cursor to "ERASE" and follow the instructions by choosing the color you wish the screen to turn to. You can erase a single line by changing the color to the background color and (a) try to recreate the line to be erased with a thicker brush or (b) change the command to "BOX" and "black box" the line area out.







## *TOPIC 73: How to Use Texture*

Performance Objectives: Students will be able to:

- become aware of textures
- create textures using line, shape, and color
- not rely solely on the patterns provided by the software to add texture to one's work

Aim: What is texture? How is creating a texture different from coloring?

Materials:

- 16 Koala pads and stylii,
- 16 Koalaware PC Design disks
- 16 data disks

Motivation:

Show pieces of black and white photos of various textured objects such as hair, wood grain, cloth, cotton, etc. Make sure that the photos don't show the outline of the subject so as to identify it.

a) Can you identify these?
b) How do you know what these are since you don't see the outline?
c) Can we create our own textures or do textures have to refer to real objects?

Development:

1. Plug in Koala pads, insert software disks, and turn on computers.

2. On a demonstration computer make three empty boxes. Fill one with a solid color, fill one with a provided pattern and leave one blank.

3. Compare the textures of the solid and the pattern. How would you describe each one? Smooth? Rough?

4. Is there repetition in each of the textures? Is repetition necessary to create a texture? Why?

5. Can someone create a texture in the third blank box using a line or shape?

6. At their own computers, have the students draw empty shapes and fill them with textures that they create using straight lines, freehand lines, shapes, color, and so forth.

7. Point out that their repeated elements must be small enough to create a texture.

Summary:

1. Making their own textures helps the students to learn to "paint" on the computer and to get a more individualized style to their computer work.

2. They become less reliant on the standard software tools.

Homework Assignment:

1. Look for three different textures around your house.

2. Using pencil and paper draw three large shapes and fill the shapes with the textures you chose.

## TOPIC 74: Building Space and Texture Through Brushstrokes

Aim: Is a painting built from brushstrokes the way a building is built from bricks?

Performance Objectives: Students will be able to:

- become aware how the impressionists and post-impressionists used brushstrokes to build their paintings.
- create brushes appropriate for what they will build
- apply the brushes properly to build space, texture and form.

Materials:

- 16 IBM PC computers
- 16 Art Studio software disks
- 16 data disks
- color printer

Motivation:

Show reproductions of impressionist and post-impressionist paintings that have obvious brushwork and build the painting with it, for example: Claude Monet's "Haystack at Sunset near Giverney", Renoir's "Landscape at Cagnes", and Van Gogh's "Starry Night" and "Bedroom at Arles."

- Why did these artists allow their brushstrokes to show instead of blending them? What do the brushstrokes accomplish?
- Did the artists have to choose their brushes carefully? What would determine their choice?
- Do the textures that the brushstrokes create make the paintings seem more life-like? Why?

Development:

1. Insert software disks and turn on computer.
2. Have ready a selection of good quality nature photographs that show texture (for example photos from Natural Geographic).
3. Select one photo and gather around demonstration computer. Review "custom brush" tool if necessary.
4. Select one element in the photo that has texture and ask students what type of brush they would create to form the texture? What shape, size, color and pattern would the brush be?
5. Create the brush using "custom brush."
6. Experiment with applying it in different densities until an appropriate texture is created.
7. Do any of the elements in the brush need to be modified?

8. Point out how the overlapping of the brushstrokes builds form and space as well as form.

9. The students should each select a photo from the collection and at their own computers begin designing brushes appropriate to an element in the photo. Save the brushes and start to paint!

10. Make colored prints.

Summary:

Painting on the computer requires us to do something that most painters who paint with paint don't do. We design our own brushes!

Homework Assignment:

Design a brush and paint with it.

## *TOPIC 75: Texture*

Performance Objectives: Students will be able to:

- . identify stippling, dotting, hatching and cross hatching.
- . use the computer to create these textures.
- . add interest to work by adding texture.

Aim: To draw and create texture in designs using various techniques.

Materials:

16 IBM computer for 32 students
PC Paintbrush software

Motivation:

Drawing is natural to man. We can see examples of drawing from as early as the time of the caveman. We can use any kind of medium to draw with, one of which is the computer. By selecting various tools we can add shapes, lines and repetition, color, rhythm and balance to our work. Today we will add textures to our work.

- . What is a texture?
- . How can we add texture to our work?
- . Why would an artist add these textures to his/her work?
- . Does the addition of dots help a drawing?
- . Do you think texture is important in art, why - why not?

Development:

1. How many different types of texture can you find in this room?
2. What characteristics do these textures give to the object?
3. Would the object "feel" correct without the texture?
    a. Before you begin working on the computer, take a crayon and several sheets of thin paper from the work table and make several rubbings of textures in this room.
    b. Place the following words on the board: DOTS, STIPPLING, HATCHING, CROSS HATCHING. What are the characteristics of these techniques?
4. Create a variety of textures on the screen using the computer and various tools and patterns available in the menu.

Summary:

When you use the spray can to mist over the surface, what texturing technique does it most resemble? (stippling). When we line several diagonal or straight lines close together, what would we call that? (hatching) If you add another set of lines that intersect the first set, we now have what? (cross hatching)

Discuss the importance of surface texture to the aesthetic appeal of the work.

## Application:

When working with the computer we oftern "discover" new textures or ideas. Has anyone created or discovered a texture we did not mention in class? What does it look like? Describe how you created it.

To work in fine detail or make specific changes in our design, it may be helpful to magnify a certain area. We can do this by using zoom in or if needed ZOOM in, this is found by using the misc selector and moving to the desired zoom in.

## Assignment

Using a piece of thin paper, repeat the rubbing technique used in class.
Find a natural object and make a rubbing of that item (for example tree bark, cobblestone, brick, wood plank).
Cut a window in a piece of cardboard or paper about 2" square.
Move the window around over the surface of the rubbing until you find that an interesting pattern has been formed in the window. Secure the window at that point.
Draw that area as a blow-up. Be aware of the details used and how the design is formed from a small area of texture.

# COLOR

200

## *TOPIC 76: Color Relativity and Dependence*

Performance Objectives: Students will be able to:

- demonstrate that the viewer's perception of color is relative and dependant upon other colors which are located adjacent to it
- gain the knowledge that hue, value, and intensity may be combined to create any color
- demonstrate an understanding of primary and secondary color
- use analagous, complimentary, split complimentary as well as tints and shades of colors to effect its intensity
- use various sizes of color areas as well as changes in hue intensity of adjacent colors to effect its perception

Aim: The student will create a design of shapes which will attempt to create one of the following illusions of color perception:

a) Create a design in which the same color is made to appear to be two different colors.
b) Create a design in which two different colors are made to appear to be the same color.
c) Create a design in which one color is made to recede and advance within the same picture plane.

Materials:

- IBM PC
- disk drive and floppy diskette
- video monitor
- printer (color)
- device for controlling the use of the selected software (keyboard, mouse, digitizing tablet or Koala pad, light pen.) The keyboard and/or mouse will be sufficient for this lesson area.
- adequate software (Delta Draw or P.C. Paintbrush will be sufficient.)
- drawing pad, water color, colored pencils, or colored paper.

Motivation:

1. Show the munsel color chart
2. Show reproductions of selected works of some of the following artists:

    a) Mondrian
    b) Frank Stella
    c) Seurat
    d) Monet
    e) Gaughin
    f) Rousseau
    g) Picasso

Development:

1. How have some of the above artists mixed and used color to effect the perception of the color within it?

2. Seurat effects the perception of color in a unique way. How and why has he been successful?

3. Monet, Gaughin, and Rousseau had the ability to make the viewer perceive color as being warm, cold, as well as atmospheric even though they worked differently. What methods have they used to attain this quality?

4. Procedure: The student should:
   a) select one of the possible illusions of color to deal with.
   b) make a determination as to the particular color to deal with as well as the shapes and relative area size of each color.
   c) do some preliminary sketches to help determine the feasibility of his idea.
   d) Demonstration:
      1. Boot up software.
      2. Select a canned shape and create one against a background.
      3. Select and use fill command for two separate colors of figure and ground.
      4. Change one of the colors so that the class may see how the first color is effected.
      5. Demonstrate save and retrieve menu functions.
   e) Student will boot up the selected software.
   f) The student will begin to create shape areas as per his preliminary sketch.
   g) The student will use the fill command to add the selected color to the design.
   h) The student will save the design for future work.
   i) The student will retrieve the design for alterations.
   j) Continue the design to completion and save the final solution.
   k) Hard copy will be possible only if a good color printer is available. If it is not, the teacher may check and grade the color design problem by viewing it on a color monitor.

5. The projected time for creating and editing of the final version of this projected color design problem will be approximately 2 to 3 class periods.

Summary:

The students will use computer generated graphics to enhance the concepts of basic design and color theory which is discussed on pages 4 through 6 of the "Introductory Art in the High School" curriculum guide of the Board of Education of the City of New York. The student will create using the elements of shape and color, one of three possible illusions of color perception.

**Assignment:**

1. Create a preliminary color sketch which will attempt to solve one of the three projected problems of illusion and color perception.

2. Organize your ideas by writing down the steps you will take to effect the color chosen to force it toward one of the three perceptual changes you have selected to take.

## *TOPIC 77: Color and Spacial Rendering*

Performance Objectives: Students will be able to:

- create a design with a foreground, middleground, and background
- create a design where the color will hold its place in space.
- select color, use color theory, color groupings and concepts to push the areas of color in and out of the picture plane visually
- create the color design through direct observation of nature

Aim: The student will create a computer generated design from observation, which will utilize color to render space. (Interior or still life)

Materials:

- IBM pc
- disk drive and floppy diskette
- video monitor
- printer (color)
- device for controlling the use of the selected software (keyboard, mouse, digitizing (Koala pad) tablet, light pen.) The Koala pad will be preferable for complex drawing of forms. The keyboard and a mouse will be sufficient for color selection and color fill commands.
- software (Delta Draw, P.C. Paintbrush)
- Drawing pad, water color paint, or colored pencils or markers
- Finished color sketch of an interior or still life from observation

Motivation:

1. Show reproductions of selected interiors or still life subjects of some of the following artists:

   a) Cezanne
   b) Degas
   c) Hopper
   d) Pearlstein
   e) Vermeer
   f) Monet

Development:

1. How have some of the above artists used color to capture the feeling of space?

2. Cezanne, Degas, Hopper, and Monet seem to use color with a different approach as compared with Pearlstein and Vermeer. What are those differences and how have these artist used these types of approaches to render the feeling of space:

3. Definitions:
    - a) Warm Colors - are colors which begin to approach yellow.
    - b) Cool Colors - are colors which begin to approach blue.
    - c) Contrast - denotes the relative differences of shades and tints (tone).
    - d) Intensity - refers to the relative purity of color.
    - e) Cast Shadow - is a shadow projected by a form interrupting a light source. This shadow touches the object as well as the ground plane.
    - f) Drop Shadow - is a shadow projected by a form interrupting a light source. This shadow does not touch the object.
    - g) Transitional Tone or Color - is a tone or color which gradually changes due to light conditions and distance from the front to the back of the picture plane.

4. Concepts of Spacial Rendering
    - a) Warm colors will advance
    - b) Cool colors will recede
    - c) High Contrast will advance
    - d) Low Contrast will recede
    - e) High Intensity will advance
    - f) Low intensity will recede
    - g) Detail will advance
    - h) Simplified planes will recede
    - i) Sharp focus will advance
    - j) Dull focus will recede
    - k) Cast shadows will allow a form to sit on a plane in space
    - l) Drop shadows will allow a form to float or fall in space
    - m) Reflected light will give the feeling that one is able to look around or behind an object which is drawn two-dimensionally.

5. Procedure:
    - a) The student will create a color sketch from observation of an interior, or still life.
    - b) The student should determine the relative distances within the drawing which he/she is trying to render.
    - c) Choose the concepts of spacial rendering to make a proper determination of the selected color for each area within the space you are designing for.
    - d) Make color adjustments wherever necessary.
    - e) Demonstrations:
        1. Teacher will boot up the selected software (Delta Draw, P.C. Paintbrush.)
        2. Demonstrate access of commands from the menu for color selection and color fill.
        3. Demonstrate save and retrieve functions.
    - f) The student will transfer their preliminary sketch to the computers using the Koala pad if possible (after booting up software.)
    - g) The student will begin color fill.
    - h) The student will adjust tints and shades of the color selected so that it will hold its place in space more readily.
    - i) The student will adjust intensity of color so that it will hold its place in space more readily.

   j) The student will save the current color assignment on disk for future retrieval and editing.
   k) The student will save the final solution to the projected problem of this lesson.
   l) The student will print out a hard copy of his final solution while viewing on a color monitor.

6. The projected time for creating this color computer painting will be approximately five class periods.

Summary:

The student will use computer generated graphics to enhance the concepts of basic design and color theory which are discussed on pages 4 through 6, 21, and 23 of the "Introductory Art in the High School" curriculm guide of the Board of Education of the City of New York. The student will create a design from observation of an interior or still life in which color is used to render space accurately.

Assignment:

1. Create a preliminary color sketch of an interior or still life from observation which you will use as a guide for your color computer painting.

2. Find color photgraphs from magazines or advertisments where the color holds its place in space properly.

3. Find some examples of color reproductions or photographs where the color is not the proper tone, contrast or intensity to hold its proper place in space.

4. Find six colors and label them one through six from near to far in terms of their spacial relativity.

## *TOPIC 78: Three-Dimensional Space on Two Dimensions*

Sub Topic: Tonal Value

Performance Objective: Students will be able to:

- define tonal value
- create a design using tonal values
- develop an understanding of special relationships using tonal value
- create a drawing using same shapes filled with different tones

Aim:

What is tonal value? How can we use tonal value to create a design? How do we use tonal value to create three-dimensional space and distance?

Materials:

Apple II, II+, IIe, IIc or compatible with 48K bytes, Koalaware's Micro-Illustrator or any updated programs, Baudville's Blazing Paddles. (If 128K is available, student can use Broderbund's Dazzle Draw), DOS 3.3 disk drive, Video monitor, a Koalapad Touch Tablet or some method of moving the cursor, formatted diskette.

Motivation:

1. Ask the students to define value. Record all the students' responses on the chalkboard. Then the teacher tries to describe it with an anecdote of the woman who is shopping for a hat. She finds the same hat in two different places. In one store the hat costs $15, and it costs $50 in a second store.

2. The hat is exactly the same, however the surroundings in which the hat is seen either increases or decreases the value of the hat. In the same way, the same square of circle can become more or less important depending upon the tonal value it has and the values with which it is seen.

Procedure:

What is the formal definition of value? (Value, in art, is defined as the lightness or darkness of a color.)

1. What is another word for color or hue? (chroma) When a single color, along with its lighter tints and darker shades are used, the design is described as monochromatic.

2. Will a lighter shape be dominant or subordinate? The lighter a shape, the more dominant it becomes.

3. Will the lighter shape look closer or farther away? (The lighter a shape, the closer it appears to the viewer.

4. What relationships will darker shapes make? (the darker shape becomes subordinate to the lighter shape. The darker shape also appears farther away than the lighter shape.

5. Let's create shapes of the same size with the computer. Open the disk drive door. Hold the diskette with the label end facing you. Insert the diskette with the label facing up into the disk drive and close the door. Now, turn on the monitor and turn on the computer.

6. Follow the directions on the screen using the keys on the keyboard and the palette or main menu will appear on the screen. For this lesson, we be using the commands "COLOR", "BOX" and "FILL". We will also need to erase (see note) and perhaps "ZOOM".

Note: For ERASERHEADS - There are various ways to erase. You can erase the whole screen by touching the pressure sensitive pad with your finger or the stylus to move the cursor to "ERASE" and follow the instructions by choosing the color you wish the screen to turn to. You can erase a single line or area by changing the color to the background color and (a) try to recreate the line or area to be erased with a thicker brush or (b) change the command to "BOX" and "black box" the line or area out or (c) use "ZOOM" to erase pixels.

7. Let's begin: create your shapes on the screen. Do not overlap them at this time because this will create the need to erase the overlapping areas. Press your stylus on the pad and direct the cursor to the desired command, "BOX".

8. Always press the top left button on the pad to set your choices. Press the button again. The blank drawing screen will appear and you may now begin to create the image. You may change your choice of commands at any time.

9. The image should consist of boxes approximately the same size and shape. See the cursor on the drawing screen and press the button. Moving the stylus will create the size and shape of the box. When the box is the desired size, again press the button on the pad and the box will remain. Repeat this process to create a handful of boxes.

10. Press the button on top of the pad to return to the palette or menu. Press the stylus on the pad to select the "FILL" command. Then press the stylus to select "COLOR". Working on a black and white screen, you will see black, white and in-between tonal values.

11. Directing the cursor to "MIX" will present another variety of patterns which produces more in-between tonal values. Choose white and press the top button. The cursor will blink because the mode is "FILL".

12. The chosen shape will fill with white. Fill one or two other boxes on the screen. Then press the top button and return to the palette. Change the color to an in-between tone and return to the drawing page in the "FILL" command.

13. Fill in two or three other boxes with this tone. The rest of the boxes will remain in the black background color. Evaluate the result. How do the boxes act against each other? Do the white boxes appear closer to you? Do the white boxes seem to dominate the other boxes?

14. How can the tonal values - white, grays and black - work for you to create desired effects of movement, contrast, dominance, repetition, harmony, variation, balance, rhythm? Practice with different size shapes. Try many arrangements.

Summary:

1. Value, in art, is defined by the lightness or darkness of a color. When a single color along with its lighter tints and darker shades are used, the design is described as monochromatic.

2. The lighter a shape, the more dominant it becomes. The lighter a shape, the closer it appears to the viewer. The darker shape becomes subordinate to the lighter shape. The darker shape appears farther away than the lighter shape.

Homework/Assignment:

To create a design using a single shape which shows the principles involved with tonal values. The student should explore overlapping shapes and therefore use techniques to erase. The student should explore the "ZOOM" command. The student is to explore various possibilities. The student must save the work on a formatted data disk. The student is to document the work by naming it with student's last name and class. If possible, make a print-out of the work.

## *TOPIC 79: Experimenting With Color*

Performance Objectives: Students will be able to:

- see how colors change as a result of their context
- learn to use this as an art-making tool

Aims: Can a color change by virtue of the color it's surrounded by?

Materials:

- 16 IBM PC Computers
- 16 Koala pads and stylii
- PC Design software disks
- 16 data disks, color printer

Motivation:

Show on a computer screen two squares of the same color, each square surrounded by a different color from each other.
a) are both of the squares the same color?
b) erase the surrounding colors.
c) what do you think now, are both of the squares the same color?

Show some reproductions of the work of Joseph Albers and discuss how his work was based on this visual phenomenon.

Development:

1. Insert software disk and turn on computer

2. At their own computers have students select a color and "box" or "disk" and repeat the shape 8 times on the screen with adequate space between each shape. Using all the eight different screen colors, surround each shape with a different color.

3. Notice how each surrounding color affects the color of the inside shape.

4. Create a design with this idea in mind.

5. Print your experiments or designs, and see if the color changes occur in the prints like they did on the screen?

Summary:

The visual phenomenon of colors changing according to their context comes in handy in trying to get color variation on computer hardware that is limited in its color capability.

Homework Assignment:

1. Try the color experiment at home surrounding eight shapes of the same color with eight different colors.
2. Use crayon, colored pencil or paint.
3. Compare with the results you got on the computer.
4. How are they different? Why?

## *TOPIC 80: Creating Space Through Color and Pattern*

Performance Objectives:

- become aware of the relationship between colors in terms of their spacial relationship to the picture plane (which colors project more)
- create the illusion of three-dimensional space in a design or picture through the use of color and pattern

Aim: Can the illusion of space be created through the use of color?

Materials:

- 16 IBM PC computers
- 16 Art Studio software disks
- 16 data disks
- color printer

Motivation:

Why are warnings, such as stop lights, red fire trucks, etc. often red? Why are they always painted in bold colors?

Development:

1. Insert software disks and turn on computer.

2. Gather around a demonstration computer.

3. Display the Art Studio menu on the screen in the white, black, cyan, and magenta palette.

4. Have the class look at the pattern section of the menu.
   a) which of the pattern swatches seems to project towards us the most?
   b) do the solid swatches project more?

5. With the marker tool make three same size squares of white, cyan and magenta on the black background.
   a) which of these three squares projects out toward us the most? Why? (the white because it contrasts the most from the black background).

6. Make three more marker squares under the first three squares.

7. Use the same size and colors but select the finest dot pattern to make them.
   a) which group of swatches project more, the solid or patterned? (The solid, because the fine black dots of the pattern make it blend more into the black background.)

8. Make three more squares underneath of same colors and size in a slightly bolder pattern.

9. Which group of patterned squares projects more? (the bolder because it contrasts more from the background) Which group projects more, the solid or the bolder? (the solid, because it still projects more than the bolder group).

10. Select the boldest pattern on the menu and make three more marker squares in same size and colors at bottom of screen. Compare with the solid group. a) which group projects more? (This time the boldest pattern.)

11. Make a set of squares in the boldest pattern but without black in the pattern. Compare how they project to the same pattern swatches with the black in the pattern).

12. Emphasize the point that whatever colors and patterns contrast the most from the existing background will also pop out the most spacially in relation to the picture plane.

13. At their own computers have the students select another color and pattern menu and do the same type of investigation.

14. Have them make a design using what they learned.

15. Make color prints of excercises or designs.

16. Compare to the image on the screen. Are the same projections occurring?

Summary:

Because of the even tones of color that are produced on the computer , it is easy to do an investigation of the type described above. The variable factor of brushstoke is eliminated which can also cause projection from the picture plane. Here, colors and patterns are reproduced exactly.

Special Assignment:

1. Make a drawing that shows three-dimensional space through perspective.

2. Save to disk.

3. Color the drawing in two ways.

4. First color it so the color and pattern reinforces the space already set up in the picture.

5. Save to disk.

6. Then color it so the color and pattern contradicts the drawn space.

7. Compare.

8. Which do you like better? Which is more interesting.

## *TOPIC 81: Monochromatic Design*

Performance Objectives: Students will be able to:

- create a two-dimensional design
- use textures to create values
- change computer tools to change values
- learn and understand the meaning of MONOCHROMATIC

Aim: What is a monochromatic design. What is its usefulness to the artist?

Materials:

16 IBM computers for 32 students
PC Paintbrush software

Motivation:

Place the word MONOCHROMATIC on the board

Proceed to show the following objects:

Old black & white photographs
Stills from old 1950-60 TV shows
Cartoon from newspaper
Delft China pattern
Currier & Ives type greeting card face
Blue period work of Picasso
Franz Marc - Blue Horses

(any of these or similar objects that reflect the idea of monochromaticity)

Development:

Refer to page 6, "Introductory Art in the High School"

1. What do all these items have in common?
2. What name is given to designs that use only one color?
3. Can you think of any other items that use a monochromatic design scheme?
4. When working on a monochromatic design, what theories or principles of color would we use?
5. What elements and principles of design would be important to our work?

Discuss the need for a good understanding of monochromatic design, the idea of seeing in black and white, with only values and intensity. Make xerox reproductions of color photos, how do they change when seen in one color?

Classwork:

On the computer make a monochromatic design. Begin with the basics, line, shape and space, then add values. Select a color and stay with it throughout the exercise.

Summary:

What is a one-colored design called? How do you achieve values with the computer?

Application:

Review glossary of vocabulary words.

Monochromatic
Value
Intensity
Texture
Line
Shape

Assignment:

Find a color photo in a magazine, reproduce the idea using a monochromatic color scheme.

## TOPIC 82: Color

Performance Objectives: Students will be able to:

- identify chromatic colors
- identify the primary colors
- understand the mechanics of creating secondary colors
- learn to create tertiary colors

Aim: To understand and use primary, secondary and tertiary colors

Materials:

16 IBM computers for 32 students
PC Paintbrush software

Motivation:
(TEACHER TO BRING PRISM TO CLASS)

Indicate your light source, an open sunny window or strong beam of light. Here is a stream of light, can someone tell me what color it is? Observation: hold prism up to the light. Can someone tell me what colors you see now?
What can we conclude from this experiment about light and color?

Development:

We begin with 3 basic colors: These are called PRIMARY colors. We can not mix or create them from any other colors. They are found in nature and are extracted from nature to be used as pigments.

- Will someone tell us what those three colors are? red, yellow, blue

When two primary colors are mixed together a new color is formed.

- What would these next generation colors be called? secondary
- Will someone tell us what the secondary colors are? orange, violet, green

LETS'S LOAD THE COMPUTER AND FOLLOW ALONG:

Using the spray can, select a primary color and spray 1/3 of your screen. Change to a second primary color and spray another 1/3 screen. Let the edges overlap.
Repeat the process with the third color and fill the remaining portion of the screen.

OBSERVE - what has happened at the points where the colors overlapped or blended?

- What formulas might we conclude from this experiment with color?
  R+ Y = O; B + R = V; B + Y = G

- If red, yellow and blue are our primary colors we can say that the secondary colors are what?

Using the computer and the same technique try to form the next group of colors which we call tertiary. A tertiary color is formed by blending two colors.

- If a secondary color is formed by mixing two primary colors, how will we form a tertiary (third order) color? primary + secondary = tertiary. These colors will be easy to remember because they contain the name of both colors used to form them. (i.e. red orange, blue green)

Summary:

We have been working with a particular group of colors called chromatic colors, these are colors that by adding to them we can form new colors.

- What types or names of colors have we worked with today?
- What colors have been excluded from today's work? black, brown, white, grey.
- How do we get secondary colors?
- How do we get tertiary colors?

Application:

When the artist works in color, he/she makes value choices as well as color choices. The selection of color can enhance or ruin an otherwise excellent design.

Can you suggest some colors that would be appropriate for a painting of:
ice & snow
sitting in front of a campfire
mountains
forest in the summer
forest in autumn

Assignment:

Create a simple drawing and copy it once so you have two identical drawings. Paint one drawing in blues, greens and violets the second in red, orange and yellow. Bring both paintings to class, discussion on color usage.

# GRAPHIC DESIGN

## TOPIC 83: Package Design

Perfomance Objectives: Students will be able to:

- create, using computer graphics, a package design for a particular product which they use.
- this computer design will contain two parts. They are as follows:
  1. a flat 2-dimensional view of the unfolded package
  2. an illustrative design which will be applied to the structural design
- create the design in such a way as to utilize a see-through die-cut window
- combine lettering and graphic illustration incorporating the die-cut window
- design illustrative graphic patterns so that multiple packages will be visually exciting upon store shelves.

Aim: The student will design, through the use of computer graphics, a structural and graphically illustrative package design which will incorporate a die-cut window.

Materials:

- IBM pc
- proper software (Delta Draw, P.C. Paintbrush, AutoCad) (lettering software-Printshop, Sign Design, Fancy Font, etc.)
- device for controlling the use of the selected software package (keyboard, mouse, digitizing tablet, light pen)
- video monitor
- printer
- sample package unfolded so that student may see cuts, creases, perforations, windows, seals, etc.
- sample illustrations - logo designs used on packaging

Motivation:

1. Show actual or reproductions of successful packaging down through current history.

2. Show successful logo designs used in packaging

3. Show reproductions of particular marketing themes (e.g. McDonald's Happy Meal.)

4. Show examples of clothing gift boxes, jewelry boxes, cosmetic packaging, food packaging, etc.

Development:

1. What do you believe to be the key to successfull packaging design?

2. What shapes, forms, or colors will tend to be attractive to the consumer?

3. What are people interested in, and how can you as a potential package designer utilize these desires to advantage?

4. Procedure:
    - a) Decide upon a product for your packaging assignment.
    - b) Study an unfolded package for structure, creases, perforations, die-cut patterns, etc.
    - c) Boot up the selected software for the structural drawing of the package.
    - d) Utilize the menu for computer graphics creation of the mechanical drawing of the structural design of the package.
    - e) Save the computerized mechanical drawing.
    - f) Print out a hard copy of the design.
    - g) Draw into the package (hard copy) for illustrative ideas.
    - h) When ready, retrieve the drawing from memory and begin to create the lettering and illustrative patterns upon the structural design.
    - i) Save this drawing seperatly under a different file name, so that you may continue to retrieve the first structural drawing as many times as you like, so that you may attempt different illustrative ideas.
    - j) Save and print out two hard copies of the final design.
    - k) Leave one design flat, and fold and cut out the other so that you may view it three-dimensionally.

5. Demonstration:
    - a) Teacher boots-up software.
    - b) Demonstrate drafting the structural package.
    - c) Demonstrate how to add illustrative design to the structural package design.
    - d) Demonstrate how to add illustrative design to the structural package design.
    - e) Demonstrate printing a hard copy.

Summary:

The student will use computer graphics to enhance the concepts of package design discussed on page 75 of the "Introductory Art in the High School" curriculum guide of the Board of Education of the City of New York. The students will create an original package design which will be illustrative as well as structural through the process of computer graphics generation. Lettering graphic design and die-cut window patterns will be integrated throughout the design.

Assignment:

1. Collect 10 examples of die-cut packaging, carefully open them up and study folds, cuts and creases.

2. How has graphic design been utilized within the examples you have found?

3. What patterns within the package seem to repeat when seen as a group on store shelves?

4. How can you incorporate such ideas within your design?

## *TOPIC 84: How to Design a Logo*

SubTopic: Designing one letter form that is the first letter of a logo and illustrating the theme of the logo, using "Delta Draw" and the IBM PC computer.

Performance Objectives: Students will be able to:

- create a logo that relates to a theme, noun, verb or business title
- design one built-up letter form
- use color that relates to a theme
- use rule lines
- use background color

Aim: How can you design a built-up letter form that relates to the theme of a logo?

Use IBM PC computer "Delta Draw" program to:

1. Draw the built-up letter and image.

2. Fill with color.

3. Draw rule lines.

4. Makes corrections in text.

5. Save the program.

Materials:

- IBM PC computer
- "Delta Draw" program
- Data disk
- drawing paper/magic markers

Motivation:

Describe how you can create a design that will describe a theme, noun, verb or business title.

Examples:
- plant store
- jump
- rock group
- alien

Development:

1. Review homework assignment.

2. Discuss the relationship of image to letter forms.

3. Compare relationship of image to typed letters.

4. Discuss relationships of color to theme of logo.

5. Identify how each element of the logo can be re-created on the IBM PC computer using "Delta Draw" program.

**Teacher demonstration:**

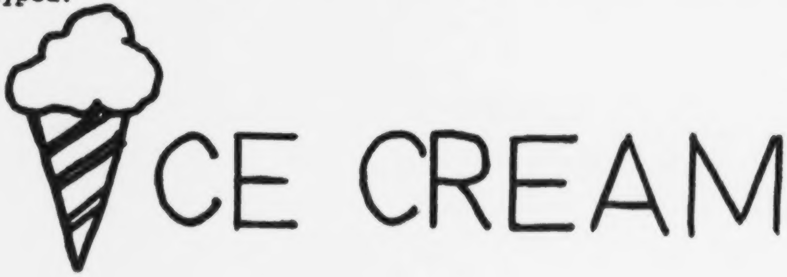
1. Boot up "Delta Draw" program on the IBM PC computer in A drive.
2. Place data disk in B drive.
3. Draw image using drawing commands.
4. Continue to draw image using modified drawing commands.
5. Fill shapes with color using fill commands.
6. Make corrections in drawing using text mode.
7. Save on data disk.
8. Give class studio assignment.

**Apperceptive Base:**

Students received in preparation for this lesson the following homework assignment:

- design three (3) thumbnail sketches in color to illustrate a logo. The first letter of the logo is an image that relates to the remainder of the word that is typed.

For example:



Indicate your ability to use two-dimensional shapes, contrasting colors that form a design that reinforces your theme.

- vary size and shape
- colors should relate to theme
- rule lines should construct a composition

**Application:**

1. Studio assignment.
2. Using Delta Draw commands and modifying drawing commands, draw an image for your logo and fill with color.

3. During the work period, students should be urged to save work in progress frequently.

**Medial Summary:**

Review two or three student works in terms of the stated performance objectives.

**Continued Application:**

Students continue to draw logo-image and save. Care should be taken to design the image on the left side of the monitor in order to design the remainder of the logo on the right side.

**Final Summary:**

Review three or four images in terms of accomplishment of the stated performance objectives

**Homework:**

1. Redesign the remaining letters of your logo design based upon the completed image you designed in class today.

2. Use the computer's ability to change the shape and size of letter forms through the commands:

   . enlarge
   . reduce
   . squeeze in
   . stretch out

Size: 5X7
Colors: red, blue, green, yellow, black

**References:**

. Delta Draw program handbook
. "Introductory Art in the High Schools" Pg. 75

## TOPIC 85 How to Design a Logo

SubTopic: Designing a logo into a composition using an image with typed letter forms and color, using "Delta Draw" program and the IBM PC computer.

Performance Objectives: Students will be able to:

- complete a logo design that uses an image, typed letter forms, color and rule lines to relate to a theme
- using the completed image/letter, add typed letters to complete the logo
- use the computer to change the letter forms through commands:
  - enlarge
  - reduce
  - squeeze in
  - stretch out
- use drawing commands to change color of typed letters, rule covers, background colors
- make corrections in text
- save the program
- photograph the completed logo with slide film

Aim: How can you design a logo using an image and typed letter forms?

Motivation:

Describe how you can use size, shape and color to date to a logo theme.

Materials:

- IBM PC computer
- "Delta Draw" program
- data disk
- camera, slide film 400 ASA

Development:

1. Review homework assignment.

2. Discuss relationship of letters to image.

3. Compare color to theme.

4. Discuss the composition of the logos.

5. Identify the creative use of the computer ability to change letter forms.

Apperceptive Base:

1. Students received the following homework assignment in preparation for this lesson.

2. Redesign the remaining letters of your logo design based upon the completed image (saved on students' data disks).

3. Use the computers ability to change the shape and size of letter forms through the commands:
   - enlarge
   - reduce
   - squeeze in
   - stretch out

Teacher demonstration:

- boot up "Delta Draw" program on the IBM PC computer in A drive
- place a student's data disk in B drive with a completed logo in memory
- demonstrate how modifying commands can create a variety of letter shapes
- type in letters in color, add rule lines
- fill background in color
- make corrections of the logo using the text mode
- save on data disk
- give class studio assignment

Application:

- studio assignment
- using Delta Draw commands and modifying drawing commands, type in logo letters, fill with color and add rule lines
- during the work period, students should be urged to save work in progress frequently

Medial Summary:

Review two or three student works in terms of stated performance objectives.

Continued Application:

1. Students continue to draw and complete logo. Save on data disk when completed.

2. If desired, completed logo may be photograph from monitor
   - use color 400 ASA film
   - use tripod
   - set film speed at 1/30 sec shutter speed

Final Summary:

1. Review all logos. Request the class to stand in order to view all monitors from one vantage point. Darken the computer lab by closing window shades, turning off lights will heighten the color contrast on the monitors

2. Discuss the completed logos in terms of instructional objectives.

References:

- Delta Draw program handbook
- "Introductory Art in the High School" Pg. 75

## TOPIC 86: How to Design a Layout

Performance Objectives: Students will be able to design a layout using:

. body copy in columns of type
. headline lettering
. rule lines
. borders
. bullets (dots)
. and to design an image

Use the IBM PC and Delta Drawing to accomplish the following:

. type body copy
. design "built up" lettering
. draw an image
. save the program

Aim: How to design a layout.

Materials:

. IBM PC computer
. "Delta Draw" program
. Data disk

Apperceptive Base:

Students receive for homework previous to this lesson:

Design a one-page layout for a school publication to advertise a social event. Include in your layout:
. headline - to capture the reader's attention
. body copy - to explain the event
. rule lines - to reinforce the composition
. borders - to allow contract between design elements
. bullets (dots) - to highlight subheadlines
. image - to illustrate theme

Indicate your ability to arrange a composition that relates headline, body copy and image to a central theme.

. Size: 8 1/2 x 11
. Medium: black and white
. Drawing technique: countour line

Motivation:

Explain how you can sell an idea through the printed page.

Development:

1. Review homework assignments.

   - Discuss the relationship of headline to theme.
   - Identify the relationship of image to headline.
   - Compare the relationship of image to theme.
   - Evaluate the effectiveness of the body copy to theme.

Note: It is assumed that previous instruction has taught the class the basic drawing commands of Delta Drawing as follows:

| | |
|---|---|
| Draw | D |
| Move | M |
| Right Turn | R |
| Left Turn | L |
| U Turn | U |

2. Teacher demonstration.

   How to use the IBM PC with Delta Draw program to design headline lettering:

   - built-up lettering through the use of drawing commands
   - change shapes of letters through changing size and shape of cursor

| | | (shift) |
|---|---|---|
| half down | | D |
| half move | | M |
| half right turn | | R |
| half left turn | | L |
| Unit draw | CTRL | D |
| Unit move | CTRL | M |
| Unit right turn | CTRL | R |
| Unit left turn | CTRL | L |

How to type body copy in columns using the computer.

How to use delete commands to design:
- rule line
- bullets (unit modifying commands)

How to save and print each phase:
- headline lettering
- body copy
- image

Saving a file

CTRL S
P P See pages 85 to 86 in Delta Draw learning program

Review of Development:

1. Select layout to be developed on the computer.
2. Design headline lettering, save/print.
3. Design body copy, save/print.
4. Design image, save/print.

Application:

1. The class begins to interpret their layouts on the computer starting with the design of the headline.

2. It should be stressed that the student designer should use the ability of the computer to:
   . change shapes and sizes
   . draw in full, half and unit moves
   . related the principles of composition to their layouts

See "Introductory Art in the High School" pages 72 and 73

Medial Summary:

Review two or three student works in terms of the stated performance objectives.

Continued Application:

1. Students must be urged to save all completed designs as this project will require a number of periods of class time to complete.

2. It is expected that the teacher will re-motivate and reinforce instructional objectives and introduce specific principles of design and computer commands as the project continues.

Final Summary:

Review three or four student works in progress in terms of satisfactory solutions to the stated performance objectives.

Homework:

1. Paste up the computer printouts and complete in color using any color medium.

2. Indicate your ability to relate color to the theme of the layout.

## TOPIC 87: Creating a Logo or Trademark for a Company

Performance Objectives: Students will be able to:

- select a lettering design to use for a particular company
- create a graphic symbol which will be synonomous with the company, product or service produced
- combine elements of form and design
- design for the company in such a way that the public will identify with the product, with the tone which the firm wants to be identified with

Aim: The student will combine lettering and graphic images to produce a symbol (logo, or trademark) for a company which produces a product or service. The design should visually communicate the company, the product or service it produces, and its relationship to and the effect it has on the consumer.

Motivation:

1. Show a series of corporate symbols.
2. Show student logos.
3. Show some logos which are visually successful.
4. Show some logos which have been made to communicate the company through massive advertising campaigns.
5. Some possible examples are: Bell telephone, I.B.M., G.E., Mobil Oil, Shell Oil, CBS, NBC, Diamond International etc.

Development:

1. How can you as a graphic designer communicate the essence of a company, product or service?
2. How does a graphic designer select a type face for a company's logo?
3. How does a graphic designer combine lettering and graphic images successfully?
4. Procedure:
   a) the student will select a company for which to design a logo
   b) the student will select a graphic image which will communicate the product or service the company produces
   c) the student will select a type style that will tend to give the public the feeling towards the product which the company wants them to perceive
   d) the student will attempt to join the two elements chosen in a thumbnail sketch form
   e) the student will at this point begin by booting up drawing software
   f) the student will begin to create the logo with the computer
   g) the student will save the working drawing on disk

h) the student will print out a hard copy of the working logo design
i) the student will draw into the logo printout any alterations or additions
j) the student will retrieve the working logo design
k) the student will edit the working logo design
l) the student will continue this process until the logo is refined and completed
m) the student will save the final logo or trademark design
n) the student will print out a hard copy of the final version of the logo or trademark project
o) the final version of the logo project will be clean, simplified, minimial design suggesting the product and its connotative relationship with the consumer
p) the estimated time for completion of this project will be approximately six to eight class periods

Summary:

1. The student will use computer generated graphics to enhance the concepts of logos and trademark discussed on pages 75 and 76 of the "Introductory Art in the High School" curriculum guide of the Board of Education of the City of New York.

2. The student will combine lettering and graphic images to produce a symbol for a company which produces a product or service.

3. The design should communicate visually the company, the product or services it produces, and its relationship, tone and effect it has with the consumer.

Assignment:

1. Find and bring into class 12 logos or trademarks which you feel are successful.

2. Analyze each logo you have selected and describe why you feel it is successful.

3. Do you know the product or service the company produces?

4. Do you feel that any of these logos could be improved? If so, how could this be accomplished?

# *TOPIC 88: Designing a Business Letterhead Using Multiple Software Packages*

Performance Objectives: Students will be able to:

- design a letterhead by combining lettering and illustration or graphic design
- demonstrate a knowledge of layout
- demonstrate a knowledge of multiple software programs
- demonstrate an understanding of the type of business being designed for

Aim:

1. The student will select a business and design a letterhead using a lettering and drawing program.

2. The student will design one with "a canned" illustration and one with a personally designed illustration.

Materials:

- IBM PC
- disk drive and floppy disk
- video monitor
- printer
- software (Print Shop, Sign Design, Fancy Font, Delta Draw, PC Paintbrush)
- device for using the selected software (keyboard, mouse, digitizing tablet or Koala pad, light pen)
- paste-up materials
- sketching materials

Motivation:

1. Reproductions of graphic design letterheads

2. Letterheads from local businesses

3. Letterheads from "super star" businesses

Development:

1. How does the artist find the relationship between the business and the printed page?

2. Do any of the unique qualities of the particular business have a visual symbol of any kind which you may use within the design.

3. Procedure:
   a) the student will begin to make a determination as to any graphic symbols which will work well with the company's name and address
   b) the student will select Print Shop and boot it up

c) the student will design a fast and simple letterhead, using "canned" illustration if possible
d) the student will save and print out hard copy of the first totally "canned" letterhead designed
e) the student will use Print Shop, Fancy Font or Sign Design to select a type face for a second letterhead
f) the student will select a drawing program (Print Shop under edit mode to redesign any canned graphics, or Delta Draw, or PC Paintbrush to create a graphic design from scratch)
g) the student will create a graphic design for the second letterhead
h) the student will save the final version of the graphic image
i) the student will print out hard copy of the text and the graphic design for the letterhead
j) the student will use a copy machine to enlarge or reduce the hard copy of the text and the graphic illustration produced so that they may be joined in the way the student has decided
k) the teacher will demonstrate the techniques for paste-up
l) the student will create a paste-up of the second business letterhead to complete the assignment
m) the estimated time for the completion of this two-part project will be approximately five to six class periods

**Summary:**

1. The student will use computer generated graphics to enhance the concepts of commercial art discussed within Chapter 4 of the "Introductory Art in the High School" curriculum guide of the Board of Education of the City of New York.

2. The student will select a business and design two letterheads, one will use "canned" type and illustrations, the other will utilize personally designed graphic material.

**Assignment:**

1. The student will select a business for which to design a letterhead.

2. Create a thumbnail sketch which will use a graphic image and type for the business name, address, and telephone number.

3. Find and bring into class some successful business letterheads.

4. Discuss in a few sentences, the reasons for their success.

5. How can you as an artist improve on a particular design?

# TOPIC 89: Lettering: Its Form, Structure and Design

Performance Objectives: Students will be able to:

- demonstrate a knowledge of alphabet classification
- demonstrate an understanding of the structural parts of the basic letter form
- utilize lettering guidelines
- set up and use a proportion of stroke to width to height
- design and letter with uniformity of strokes, axis and proportion

Aim:

1. The student will design an alphabet using uniformity within structural parts of the letter form, and proportional guidelines.

2. The student will use this newly-designed alphabet, visually spacing them to form their name.

Materials:

- IBM PC
- disk drive and floppy disk
- video monitor
- printer
- software - Delta Draw, PC Paintbrush
- device for using the selected software (keyboard, mouse digitizing tablet or Koala pad, light pen)
- sketching materials
- paste-up materials

Motivation:

1. Show various styles of lettering.

2. Discuss the relative uses of the letter form.

3. Show designs incorporating the letter form.

4. Show prior student lettering designs.

Development:

1. How can the artist design a new letter form?

2. What consistencies should there be?

3. What are the basic classifications of the alphabet?
   a) gothic - one thickness letter, usually without serifs
   b) roman - thick and thin, usually with serifs
   c) egyptian - heavy set, usually thick and thin with prominent triangular slab-like serifs
   d) text - contrasting thickness (block - Old English)
   e) italic - slanted forward

f) face - a) light-slender; b) dark-bold
g) construction - a) single stroke; b) build-up
h) width - a) normal; b) condensed; c) extended
i) finish - a) serif; b) sans-serif

4. Definitions of the structural parts of the letter form which the student will be designing.
   a) face - style of the letter form
   b) upper case - capitals
   c) lower case - miniscules
   d) stroke - the individual element of the letter
   e) stem - the main upright element of the letter
   f) hairline - the thin part of the thick and thin letter
   g) descender - is the element of a lower case letter which falls below the base line
   h) ascender - is the element of a lower case letter which is over the stem or body of the letter
   i) crossbar - is a horizontal stroke across the body
   j) serif - is a spur finish at the upper or lower terminals of the letter
   k) fillet - connects the serif to the stem
   l) nick - is a triangular space near the guideline where two strokes meet or blend
   m) kern - curved ball at the end of an ascender or descender
   n) lobe or loop - is the curved section of the letter B
   o) swash - flourishing tail like element of a letter (e.g.,)
   p) counter - is the white space within a lobe of a letter

5. Basic lettering guide lines.
   a) cap line - top of capital
   b) ascender line - top of lower case +
   c) T line - top of lower case T
   d) waistline - top of body
   e) baseline - bottom of body
   f) drop or descender line - bottom of descender

6. Uniformity of the letter form.
   a) guides are consistent
   b) uniform elements of the letter form structural parts
   c) uniform axis

7. Basic preparation.
   a) stroke = 1
   b) body = 5
   c) ascender = 5
   d) cap line = 7
   e) descender = 5
   f) T line just above waist line

8. Letter form construction grouping.
   a) curved - C, G, O, Q, S
   b) vertical and diagonal - K, M, N, W, Y
   c) vertical and horizontal - E, F, H, I, L, T
   d) diagonal and horizontal - A, Z
   e) vertical and curved - B, D, J, P, R, V
   f) diagonal - X, V

9. Procedure.
   a) the student will create a thumbnail sketch of a possible letter form
   b) using uniformity of structure and construction groupings, the student will begin to sketch other letters of the same style
   c) the student will boot up the selected software
   d) the student will begin to design with the computer, a new style of letter face
   e) the student will save each letter grouping when completed
   f) the student will print out hard copy of each letter group daily and draw into it for homework for any changes and or addition to the uniformity of design, stroke or axis
   g) the student will retrieve the working design and edit accordingly
   h) the student wil save the final version of each group of letters
   i) the student will print out hard copy of each complete letter group
   j) the student will print out the letters of his name and letter space them accordingly to create them in the newly developed alphabet
   k) the estimated time for completion of this project will be approximately ten class periods

Summary:

1. The student will use computer generated graphics to enhance the concepts of lettering discussed on pages 11 and 12 of the "Introductory Art in the High Schools" curriculum guide of the Board of Education of the City of New York.

2. The student wil design an alphabet using uniformity within the structural parts of the letter form and proportional guidelines.

3. The student will also letter space this new alphabet to form his or her name.

Assignment:

1. Sketch a new letter style using the element discussed.

2. Draw into hard copy of working drawings for changes.

## TOPIC 90: Designing Hand-Built Lettering

Performance Objectives: Students will be able to:

- design a theme for hand-built lettering
- design capital letters for selected words
- design lower case letters for selected words
- design spacing for hand-built lettering
- design ascenders for hand-built letters
- design descenders for hand-built letters

Aim: How can you design hand-built lettering using "Dr. Halo" drawing program and the IBM computer?

Materials:

- "Dr. Halo" drawing program with joy stick or Koala pad or keyboard
- IBM PC computer
- 35mm camera, ASA 400 color slide film, tripod
- computer printer

Motivation:

How can the computer assist in designing hand-built lettering?

Development:

1. Review the hand built lettering homework assignment.
   a) discuss the relationship of lettering style to theme
   b) evaluate the capital letter design to the lower case letters
   c) discuss the design of the ascender design to the body of letter
   d) evaluate the design of the descender to the body of letter

2. Demonstrate how "Dr. Halo" drawing program may be used to design hand built letters and save the lettering on the data disk.
   a) boot up "Dr. Halo" in the A drive
   b) set up joystick or Koala pad
   c) place data disk in B drive
   d) demonstrate the following in drawing hand-built lettering
      - drawing modes
      - straight lines
      - face hand drawing/spacing
      - color fills
      - editing drawings
      - saving programs

3. Give studio assignment.

### Application:

1. Give student assignment.

2. Based upon the class discussion of the hand-built lettering assignment, design your lettering on the computer using "Dr. Halo" drawing program.

3. Save your program.

### Medial Summary:

Review two or three hand-built lettering projects with the class in terms of the previously stated instructional objectives.

### Continued Application:

1. Students should continue to design and save hand built lettering designs.

2. As the teacher circulates around the lab each students lettering assignment should be reviewed in terms of the instructional objectives.

3. Completed lettering can be printed and/or photographed.

### Final Summary:

1. Select four or five completed hand-built lettering projects.

2. Discuss the following:
   a) capital letter relationship to lower case letters
   b) ascender and descender relationship to letter body
   c) spacing
   d) relationship of entire word to theme

### References:

- "Dr. Halo" drawing program
- "Introductory Art in the High Schools"

## TOPIC 91: Designing a Business Card

Performance Objectives: Students will be able to:

- think of creative ideas for businesses for which to design cards, i.e,. magic shows, balloon stores, car services, etc.
- design within a small prescribed rectangular format using lettering and optional image
- write simple basic programs

Aim: How can you design a business card on a computer?

Materials:

- 17 IBM PC
  Tandy 1000 or
  Apple IIe computers with color or monochrome monitors
- 3 daisy wheel or dot matrix printers
- 34 initialized disks for Apple IIe
- 34 initialized disks for IBM PC or
- 34 DOS/File disks for Tandy 1000

Motivation:

1. Exhibit business cards.

2. Examine the variety of placement available for name of business, address, telephone number, representative's name and graphic.

Development:

1. Students to make thumbnail sketches (in art classroom or for homework.)

2. Draw a rectangle on the board - put in name, graphic and other information needed for a business card - let students make changes and addition to teacher's drawing.

Note to teachers:
a) experiment to determine size of type on printer - often different from size of type on the computer screen
b) for the Tandy 1000 computer hooked up to a Tandy printer 32 spaces wide by 13 spaces high is a good size for a business card

3. Can you think of ideas for companies for which you could design business cards? (teacher to list ideas on board)

4. How big should the name of the company be? (you can leave spaces between letters to make words longer and appear bigger)

5. Where should you put the lettering? (capital or lower case)

6. Should you use a graphic?

7. Should you do it on the computer or do you want to draw it on later?

8. Boot up machine

Worksession:

1. Students to design three different business cards using the same information.
2. Student to print all three designs.
3. Students to edit programs.
4. Students to print best card for grade.
5. Students to print a second copy eliminating the main heading.

Summary:

1. Why is the computer beneficial for a project such as this?
2. What are the two ways to eliminate the headline before printing? (editing the program or erasing using the space bar before printing)

Application:

Design a business card for yourself, i.e., John Doe, student
John Doe, artist
John Doe, DJ, etc.

Assignment:

1. Do hand lettering on your second computer print-out.
2. Lettering should be suitable for the business you have chosen.
3. It may be larger than the computer type.

## *TOPIC 92: How to Design a Layout*

Sub Topic: Designing Thumbnail Sketches For a Layout Using Delta Draw and the IBM PC Computer

Performance Objectives: Students will be able to:

- use pencil and paper to design thumbnail sketches of a one-page layout
- draw page shapes on the monitor using Delta Draw commands
- draw lines within the page shapes on the monitor using Delta Draw commands to indicate the following:
  - Headlines
  - Subheads
  - Body copy
- draw forms within the page shapes on the monitor using Delta Drawing commands to indicate the following:
  - Photographs
  - Drawn images
  - Borders, rule lines, bullets.

Aim: How can you create thumbnail sketches for a layout using "Delta Draw" and the IBM PC computer?

Materials:

- Delta Draw program
- IBM PC Computer
- Pencil/paper
- Professional solutions - previous student work

Apperceptive Base:

Students received the following homework assignment in preparation for this lesson

Create four thumbnail sketches for a one-page layout. Indicate the following in your thumbnail sketches.

- Headline and subhead
- Body copy
- Image
- Rule lines and bullets
  - Size: 3x5
  - Style: use contour line
  - Materials: Pencil and paper

Motivation:

How can you design a layout that will call attention to a selected theme?

Development:

1. Review with the class the homework assignment. Discuss relationship of elements in the layouts to each other
   - Headline to body copy/image to headline
   - Theme to headline/body copy/Image
   - Compare the impact of layouts with formal composition to informal compositions.
2. Teacher demonstration: Boot up "Delta Draw" program in the A drive
3. Place student's data disk in the B drive
4. Plan and draw the outer measurements of the page. Lay out on the monitor and save on data disk
5. Type headline lettering using labeling commands and save on data disk
6. Draw in rule lines with drawing commands to indicate subhead lettering and save on data disk
7. Draw in rule lines with drawing commands to indicate body copy and save on data disk.
8. Give the class studio assignment

Application:

1. Studio assignment on the basis of the class discussion. Select one thumbnail sketch and draw on the monitor, using Delta Draw. Sketch should include:
   - Headline
   - Subhead
   - Body copy
2. Class begins to work on studio assignment

Medial Summary:

Review two or three student created thumbnail sketches on the monitor. Discuss with the class in terms of previously stated instructional objectives

Continued Application:

Students continue to draw a thumbnail sketch on the monitor. The teacher should continue to reinforce the following commands:

1. Boot up Delta Draw in the A drive.
2. Place student's data disk in the B drive.
3. Plan and draw the outer measurements of the page. Lay out on the monitor using Delta Draw and save on the data disk.

4. Type headline lettering using Delta Draw labeling commands and save on data disk.

5. Draw in rule lines with Delta Draw commands, subhead lettering, and save on data disk.

6. Draw in rule lines with Delta Draw commands, body copy, and save on data disk.

### Medial Summary:

Review two student-created thumbnail sketches on the monitor. Discuss them with the class in terms of the previously stated instructional objectives.

### Continued Application

(studio Assignment)

Student should continue to draw one thumbnail sketch on the monitor using Delta Draw. As the teacher circulates around the lab, each student layout should be reviewed for the following:

- Relationship of theme to layout
- Impact of headline size and position in layout design
- Relationship of body copy to layout design
- Impact of image to layout design
- Save frequently

### Final Summary:

1. Select four or five computer layouts and review in terms of previously stated instructional objectives.

2. All students must save completed work on their data disks and return instructional materials at the request of the teacher.

3. Turn off the computer, remove program and data disks.

### Homework:

Using pencil and paper design with color marker, design and fill with color the headline lettering of your layout.

Indicate your ability to:

1. Design or select a typeface that relates to the theme of your layout.

2. Select colors that relate to the theme of your layout.

3. Compare your headline lettering to the scale of your selected layout.

4. Size 3x7

**References**:

1. Delta Draw program handbook
2. "Introductory Art in the High School" pages 72,73

## *TOPIC 93: Designing a Layout*

Sub Topic: Designing Body Copy Format For a Layout, Using "Delta Draw" Program and the IBM PC computer.

Performance Objectives: Students will be able to:

- use pencil and paper to design a body copy format that relates to the theme of the selected layout.
- draw the body copy format on the computer using "Delta Draw" drawing commands to size in relation to the completed headline and image.
  - use labeling command and scaling commands to print subhead
  - use drawing commands to draw two (2) rule lines to note type size
  - if desired draw ballet notes using modified drawing commands

Aim: How can you create body copy format using "Delta Draw" drawing program and the IBM Computer that relates to your theme?

Materials:

- Delta Draw program
- IBM PC computer
- Professional solutions, previous student work

Apperceptive Base:

1. Students received the following homework assignment in preparation for this body copy format lesson.

2. Using T-square and pencil create a variety of body copy shapes that relate to the theme of your layout.

   - Materials: Paper, pencil, T-square
   - Size: As related to the same size of your planned layout.

3. Indicate your ability to plan a body copy format that

   - Creates a balance in the layout
   - Relates to the lettering and image in your layout

Motivation:

How can the computer speed up the design of body copy formats?

Development:

1. Review the body copy homework assignment. Discuss the relationship of body copy to the theme of the layout

2. Evaluate the relationship between the body copy and the design elements of headline lettering image.

3. Demonstrate how "Delta Draw" drawing program may be used to form body copy.

4. Give the class the studio assignment

Application:
(Studio Assignment)

- Studio assignment: On the basis of the body copy format homework assignment, create a body copy format on the IBM PC Computer using the "Delta Draw" program that relates to the theme of your layout. Save your body copy on your data disk.

- Boot up "Delta Draw" in the A drive.

- Place students data disk in the b drive.

- Plan and draw the body copy format on the monitor using "Delta Draw" drawing commands.

- Save completed body copy designs on data disk

Medial Summary:

Review two or three body copy solutions on the computer. Discuss with the class in terms of previously stated instructional objectives.

Continued Application:

Students should continue to draw body copy formats using "Delta Draw" drawing commands. As the teacher circulates around the lab, each student's body copy format should be reviewed in terms of the following:

- Relationship of body copy to theme
- Relationship body copy outer shape to letter forms and image
- Save student work frequently

Final Summary:

Select four or five computer body copy formats, request the class to stand to view all designs under discussion from one point of view. It is suggested that the shades be drawn closed and lights turned off to heighten the contrast on the computer. Compare and discuss the body copy formats in terms of the previously stated instructional objectives.

Turn off computers, remove program and data disks.

Homework/Assignment:

Using color markers color in the lettering and image with colors that reinforce the theme of your layout.

Note: You may color directly on your original art work as the headline lettering and image have been saved on your data disk in contour line.

Color: four colors plus black and white
Materials: color markers, paper

Indicate your ability to select colors that relate to your selected theme.

References:

- "Delta Draw" drawing program
- "Introductory Art in The High School" pages 72,73

## TOPIC 94: Designing a Layout

Sub Topic: Designing an Image For a Layout Using Delta Draw Program and the IBM PC Computer

Performance Objectives: Students will be able to:

- use pencil and paper to design an image that relates to the theme of the selected layout
- draw original image in contour line using the "Delta Draw" program on the monitor and save
- compose textures in the image using the "Delta Draw" program on the monitor and save.

Aim: How can you create an image for a layout using "Delta Drawing" program and the IBM PC Computer that relates to your theme?

Materials:

- Delta Draw program
- IBM PC computer
- Pencil/paper
- Professional solutions, previous student work

Apperceptive Base:

Students received the following homework assignment in preparation for this drawing lesson.

Using black and white on paper create a contour line image that relates to the theme of your layout.

- Materials: Paper, pen and ink
- Size: As related to actual size of the layout

Indicate your ability to draw an image that includes the following:

- Relates to the theme of the layout
- Balance of composition
- Contrast, variety of lines and shapes
- Rhythm
- Textures to indicate light and darks

Motivation:

Explain how an image can reinforce the theme of a layout.

Development:

1. Review the image drawing homework assignment with the class.

2. Discuss the relationship of the image to the theme of the layout.

3. Identify the basic elements of composition in the image.

4. Describe how the "Delta Draw" drawing commands can be use to:

   - Draw a contour line image using "Delta Draw" drawing commands
   - Create textures to indicate light and dark tones within the image using
     - Kaleidoscope mode
     - Drawing commands

5. Teacher demonstration, draw an image on the computer

6. Give the class the studio assignment

Application:
(Studio Assignment)

1. Studio assignment

2. On the basis of the image drawing homework assignment, create an image on the IBM PC computer using the "Delta Draw" program that relates to the theme of your layout and emphasizes textures. Save on your disk.

3. Boot up "Delta Draw" in the A drive

4. Place students data disk in the B drive

5. Plan and draw the image on the monitor using "Delta Draw" drawing commands.

6. Fill in textures to indicate lights and darks using
   - "Delta Draw" drawing commands
   - Kaleidoscope mode

Medial Summary:

Review two or three image solutions on the computer. Discuss with the class in terms of previously stated instructionsl objectives.

Continued Application:

Students should continue to draw the image assignment using "Delta Draw" drawing commands. As the teacher circulates around the lab, each student image should be reviewed in terms of the following:

- Relationship of theme to image
- Use of elements of composition within the image
- Full discussion of the use of textures to indicate lights and darks
- Encourage students to "save" after each step.

Final Summary:

Select four or five computer image drawings, request the class to stand to view all designs under discussion from one point of view. It is suggested that the shades be drawn closed and the lights turned off to heghten the contrast on the computer. Compose and discuss the image solutions in terms of the previously stated instructional objectives.

Turn off computers, remove program and data disks

Homework Assignment:

Using "T" square and pencil, create a variety of body copy shapes that relate to the theme of your layout.

- Materials: paper, pencil, T square
- Size: As related to the actual size of your planned layout

Indicate your ability to plan a body copy format that:

- Creates a balance in the layout
- Relates to the lettering and image in your layout

References:

- "Delta Draw" program
- "Intoductory Art in the High School" pages 72,73

## *TOPIC 95: Designing a Layout*

Sub Topic: Designing Headline Lettering for a Layout Using Delta Draw and IBM PC Computer

Performance Objectives: Students will be able to:

- use pencil and paper to design headline lettering that relates to the theme of the selected layout
- draw original headline lettering on the monitor using Delta Draw program
- design a relationship between capital letters and lower case letters
- use the Delta Draw program to scale letters using the computer

Aim: How can you create Headline Lettering for a layout using "Delta Draw" and the IBM PC Computer?

Materials:

- Delta Draw program
- IBM PC computer
- Pencil/paper
- Professional solutions - previous student work

Apperceptive Base:

Students received the following homework assignment in preparation for this headline lettering lesson.

Using pencil/paper and color markers, design and fill with color the headline lettering for your layout.

Indicate your ability to:

- Design or select a type face that reflects the theme of your layout.
- Select colors that relate to the theme
- Compose your headline lettering to the scale of your layout.
- size 3x7

Motivation:

How can letter forms reinforce a theme in a layout?

Development:

1. Review the headline-lettering homework.

2. Discuss the relationship of letter form to theme.

3. Relate color to theme.

4. Evaluate design relationship of capital letters to lower case letters.

5. Discuss spacing and/or connection of letters.

6. Teacher demonstration of how to design a headline on the IBM PC computer using the "Delta Draw" program.

7. Boot up "Delta Draw" in the A drive

8. Place students data disk in the B drive.

9. Plan and draw the outer measurements of the heading lettering on the monitor using the "Delta Draw" program and save on data disk.

10. Create capital letters in contour line and save

11. Give studio assignment

Application:

Studio assignment: On the basis of the homework assignment and the class review of the headline homework, create your best headline design on the computer. Save your headline design on your data disk.

Medial Summary:

Review two or three headline solutions on the computer. Discuss with the class in terms of previously stated instructional objectives.

Continued Application:

Students continue headline designs.

1. During work session teacher reviews shapes of letters, relationship of capital to lower case. Save frequently on data disk.

Medial Summary:

1. Select four or five computer lettering assignments, request the class to stand to view all designs with discussion from one point of view. It is suggested that the shades be drawn closed and the lab lights turned off to heighten the contrast on the computer. Compare and discuss the lettering solutions in terms of previously stated instructional objectives.

2. Turn off computer, remove program and data disks

Homework/Assignment:

Using black and white on paper create a contour line image that relates to the theme of your layout.

1. Materials: Paper, pen and ink

2. Size: As related to actual size of layout

3. Indicate your ability to plan a composition to include the following:

   - . Balance of composition rhythm
   - . Relates to theme of layout
   - . Variety of lines and shapes, contrast
   - . Textures to indicate lights and darks

References:

1. Delta Draw program handbook

2. "Introductory Art in The High School" pages 72,73

## TOPIC 96: Designing a Layout

Sub topic: Printing the Headline, Image and Body Copy on the Printer Using "Delta Draw" and The IBM PC Computer.

Performance Objectives: Students will be able to:

- bring up out of memory from the data disk programs of
  - Headline
  - Image
  - Body copy
- make corrections on saved programs through the text mode
- print corrected programs on the printer

Aim:

How can you print programs of headlines, image and body copy saved on the data disk on the printer?

Materials:

- Delta drawing program
- IBM PC Computer
- Printer
- Previous student computer print-outs

Apperceptive Base:

Students received the following homework assignment in preparation for this computer printing lesson.

Using color markers, color in the lettering and image with colors that reinforce the theme of your layout.

Indicate your ability to select colors that relate to your selected theme.

Color: four colors plus black and white

Motivation:

Describe how color can reinforce and relate to the theme of a layout.

Development:

1. Review the color lettering and images completed for homework.
   - discuss the relationship of color to the letter forms
   - elaborate the relationship of color to the theme of the layout
   - discuss the relationship of color to the composition of the image
   - elaborate the relationship of color in the image to the theme of the layout.

2. Demonstrate how "Delta Draw" drawing program may be used to print programs of headline lettering and image. Save on student's data disk using the IBM PC computer and printer.

3. Give the class the studio assignment.

Application:
(Studio Assignment)

- Studio assignment
- Print the following programs saved on your data disk
  - headline lettering
  - Image
  - Body copy
- Boot up "Delta Draw" in the A drive
- Place students data disk in the B drive
- Make final changes in headline, image and body copy in preparation for printing
- Print elements of layout design
- Add color to printed elements with color markers

Medial Summary:

Review two or three printed layout elements with the class in terms of previously stated instructional objectives.

Continued application:

Students should continue to correct the elements of the layout design and print completed designs. As the teacher circulates around the lab, each student's elements should be reviewed in terms of relationship to the theme of the selected layout. Review should also continue on color added to printed elements.

Final Summary:

Selected four or five printed elements for class evaluation. Discuss the body copy, headline lettering and image in terms of the previously stated instuctional objectives.

Turn off computer, printers, remove all program and data disks.

Homework/Assignment:

Bring to class the following materials:

- Rubber cement
- Triangle
- Single edge razor
- 11x15 illustration board

References:

- "Delta Draw" drawing program
- "Introductory Art in The High School" pages 72,73

## TOPIC 97: Designing a Layout

Sub Topic: Completing the Layout by Making a Mechanical With the Headline, and Body Copy

Performance Objectives: Students will be able to:

- prepare materials and tools to make a mechanical
- mix rubber cement with thinner to proper consistency
- have in place
  - drawing board
  - single edge razor and masking tape
  - T-square and tringle
  - illustration board
- complete a mechanical using the computer print-outs

Aim:

How can you create a page layout using the computer print-out of headline, image and body copy?

Materials:

- Computer print-outs
- Mechanical/materials and tools/illustration board
- Color markers/pick-up gum/kneaded eraser
- Tracing paper/masking tape

Apperceptive Base:

Students have completed the elements of a layout, added color to the headline lettering and image and are now ready to complete the project.

Motivation:

How can you make a mechanical that is clean and accurate?

Development:

1. Review materials and tools required for a mechanical

2. Conduct a teacher demonstration, how to make a mechanical

   - mix rubber cement to correct consistency
   - mount the illustration board on the drawing board using the T square and masking tape
   - prepare all surfaces with coated rubber cement
     - illustration board
     - headline
     - image
     - body copy

3. Demonstrate paste-up and alignment using razor, T-square and triangle

4. Clean-up with pick-up gum and kneaded eraser.

5. Mount over-lay tracing paper.

6. Give studio assignment.

Application:
(Studio Assignment)

- Studio assignment
- Make a mechanical of your one-page layout consisting of headline, image and body copy. Fill in areas missing color with color markers.

- The teacher will circulate around the studio assisting individual students with the task of completing a mechanical.

Medial Summary:

Review two or three mechanicals with the class in terms of previously stated instructional objectives.

Continued Application:

Students should continue to complete their one-page mechanical adding color marker color to those areas that require additional attention. In the event a design element is destroyed in the mechanical process, then the "Delta Draw" program should be booted up with the student's data disk in order to print additional design elements.

Final Summary:

The final summary of six lessons should include all students' work. During the evaluation the following questions may be asked.

- Discuss the use of the computer in designing this layout

- Elaborate the relationship of each part of the layout to the entire design.

- Relate the use of color to the theme of the layout

- Elaborate the use of rule lines to the composition of the layout.

- Describe the best medium for this page layout
    - Newspaper
    - Magazine

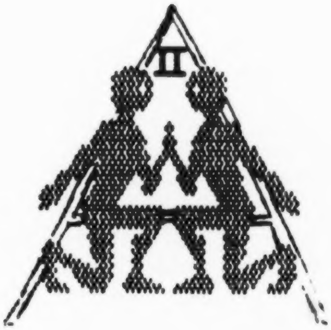
References:

- "Introductory Art in The High School" pages 72,73

## TOPIC 98: Two-Dimensional Line for Drawing and Designing

Sub Topic: Line Equals Stroke to Create Type Styles

Performance Objective: Students will be able to:



- analyze letters to identify the strokes of the letter
- become familiar with Gothic, Roman, italic and serif lettering
- create letters using computer equipment and overlays on the computer monitor
- use the straight diagonal line to create calligraphic lettering
- repeat a line design in order to create a different style of type

Aim:

What is the basic element of a letter? What are the two major styles of type (or letters)? What is an italic letter? What are serifs? How can we use line to embellish the basic type styles and create new type styles? How can the diagonal straight line be used to create calligraphic effect? To enhance pgs. 11 and 12 of the NYC high school art curriculum guide.

Materials:

Apple II, II+, IIe, IIc or compatible with 48K bytes, Baudville's Blazing Paddles, or Koalaware's Micro-Illustrator. complete typefaces are available, for example, on Beagle Bros' Apple Mechanic Typefaces. (If 128K is available, student can use Broderbund's Dazzle Draw), DOS 3.3 disk drive, Video Monitor, a Koalapad Touch Tablet or some method of moving the cursor, one formatted diskette per student. Clear tracing paper, pencil, ruler.

Artists - refer to charts on lettering and calligraphy, books from art supply stores for press-type information.

Motivation:

Teacher demonstrates on blackboard with double stick chalk or on the monitor using stylus and Koala pad, with the software's "BRUSH" pressing the straight diagonal line. Students watch the teacher demonstrate calligraphic writing.

Procedure:

Teacher calls on a student to respond to the question; "How many lines were used or how many times was the stylus lifted to create the name on the screen"? A student is chosen to try to analyze the name and come up with a rough estimate.

1. What is the name of the line used to create a letter? many of these lines are used to create a single letter. (a stroke)

2. What is a element of the stroke which gives letters variety? (the

weight - thickness or thinness of the line or stroke)

3. What is the name of the most basic type of lettering? (Gothic)

4. What makes this type most basic? The answer has to do with the weight of the stroke. (All the strokes of Gothic letters are of the same thickness)

5. What is the style of letter or type if the letter contains thicker and thinner strokes? (Roman)

6. What name is added on to the type style when either Gothic or Roman letters are given a slant? (Italic such as Italic Roman)

7. What is the extra added stroke made on the ends of the basic strokes to embellish or decorate the letters? (serif - no added strokes are called san serif) Serifs serve only a decorative function. Teacher will ask the students to pick their last name initial and analyze it for the number of strokes to make the letter. Teacher can analyze with the class the first few letters of the alphabet as examples. Then students will go directly to the calligraphic effect. Each student will create his initial using the straight diagonal "BRUSH" on the software menu. Students will use the proper number of strokes to create their initial.

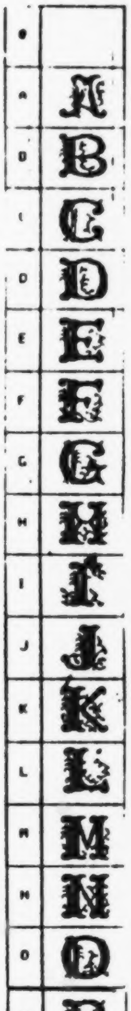
8. Students must create an overlay to tape onto the screen. The overlay will be two straight and parallel lines. The space between the lines will be the height of the letters. Draw in lines on the tracing paper with ruler and pen or pencil and tape over the screen so that the lines run horizontal across the screen area. Use this as you would the lines on a notebook sheet of paper.

9. Open the disk drive door. Hold the diskette with the label end facing you. Insert the diskette with the label facing up into the disk drive and close the door. Now, turn on the monitor and turn on the computer.

10. Follow the directions on the screen using the keys on the keyboard and the palette or main menu will appear on the screen. For this lesson, we will limit the menu to these commands: "DRAW" and "LINE". We will limit "BRUSH" to the straight diagonal line.

11. Let's begin with "DRAW". Place the stylus on the Koala Pad and place the cursor on the screen to "DRAW". With your other hand, press the top left button of the Koala pad. The screen will become a blank page ready for you to draw on. Now, press the stylus onto the pad and see the cursor appear on the blank screen.

12. Continue to press the top left button of the pad and draw with the stylus. To discontinue a line, lift your finger or stylus from the top left button and find a new place to start with the cursor. Again, see the cursor and press the top left button to begin the next line.



13. Students can create their initials in many different ways using serifs, italics and other embellishments.

## Summary:

1. Stroke is the line which composes letters and is its basic element. Gothic letters are made using strokes of all the same thickness. Roman letters are made using strokes of different thickness.

2. Serifs are the extra strokes at the end of a stroke which are used purely for ornamental reasons. Italic refers to the slanted letter. The calligraphic type or lettering style uses a straight diagonal line for strokes. Any line decoration can create a new type or lettering style when the decoration is related to all the letters of the alphabet.

## Homework/Assignment:

To create a new type or lettering style. The student will show a separate drawing for the line pattern which is to be repeated to create the letters. The new letters will spell out the student's last name both in upper and lower case letters. The student may put into practice all the elements of line learned to this point.

## Extra:

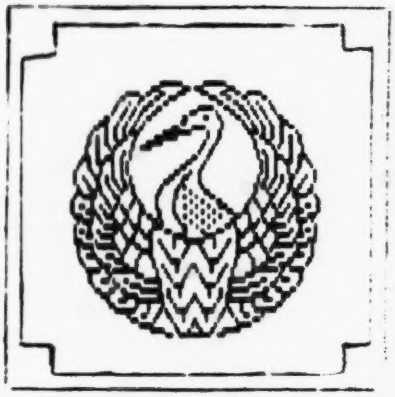
Create the entire alphabet, upper and lower case of your new type style. Or create a new type style as a new advertising look for Coca-Cola or Pepsi. The student is to save the drawings on a formatted data disk. The student is to document the drawing by naming it with student's last name and class, and name drawing "lettering". Make a print-out.

Note: For ERASERHEADS - There are various ways to erase. You can erase the whole screen by touching the pressure sensitive pad with your finger or the stylus to move the cursor to "ERASE" and follow the instructions by choosing the color you wish the screen to turn to. You can erase a single line by changing the color to the background color and (a) try to recreate the line to be erased with a thicker brush or (b) change the command to "BOX" and "black box" the line area out.

# *TOPIC 99: Two-Dimensional Line for Drawing and Designing*

Sub Topic: Decorative line, Illumination and Border Design

Performance Objective: Students will be able to:



- analyze print on a page or border area in order to create a design harmonious with the print
- use a linear pattern to decorate the letters of a manuscript
- use a specific curvilinear flower, leaf, insect, or human form to decorate the area of the printed page, or use a drawing to decorate the page
- identify and become familiar with the straight diagonals and zigzags of Art Deco and the curvilinear and floral designs of Art Nouveau

Aim:

How can we use line to decorate a page of printed material? What is the outside area of the page? How can we be creative with the border area? How much area should a border take? What are some historical examples of border design as decorative elements? What is the effect of an Art Deco line design? What is the effect of an Art Nouveau line design? To enhance pgs. 60, 72, and 100 of the NYC high school art curriculum guide.

Materials:

Apple II, II+, IIe, IIc or compatible with 48K bytes, Baudville's Blazing Paddles, or Koalaware's Micro-Illustrator. Teacher can use Data "Transorms" Fontrix which contains the links to create border designs. (If 128K is available, student can use Broderbund's Dazzle Draw), DOS 3.3 disk drive, Video monitor, a Koalapad Touch Tablet or some method of moving the cursor, one formatted diskette per student.

Artists - refer to Christian, Medieval, Flemish and Romanesque illumination; Art Nouveau artist Henry van de Velde posters; Art Deco posters, architectural design, Chrysler Building, NY, and jewelry design.

Motivation:

Teacher shows acquired examples of types of illumination or Art Deco and Art Nouveau posters, jewelry, or architecture to the students. Teacher makes the point that line has historically been used to embellish print. The two basic line groups also had their special time in art history when they were used as decorative elements in art and architecture.

Procedure:

Teacher points to the different examples of illumination and can ask the students questions based upon the elements of line that they have learned up to this point.

1. What is the main group of line used to create this decorative design?

2. What is the theme of the print? Is the theme of the print made clearer by the use of the border area, margin area or is the border purely decorative?

3. Do we see the use of contour line to create form?

4. What is the weight of the line used? Does it create a heavy and contained look, or is the look light and airy?

5. What is the Art Nouveau style? (Art Nouveau was a type of decoration which originated in France during the turn of the century and enjoyed popularity in the arts, influencing all forms of art until the late 1920's. The dominant force was the use of curvilinear design of flowing forms.)

6. What is the Art Deco style? (Art Deco was a cubist-influenced style, which replaced Art Nouveau as the dominant style of design in the arts during the 1930's and 40's. Artists were concerned with meeting the demands of the new, using practical line; straight, angled, zigzag.)

7. The student will then use the information received during this dicussion to create a border design to be used with print on the computer screen. Student will start with a single thin box to define the outer area of the border and will create another smaller box to define and limit the inner area of the border.

8. The student must use a line design in the area defined in the border. Lines are allowed to flow outside the area of the border. Open the disk drive door. Hold the diskette with the label end facing you. Insert the diskette with the label facing up into the disk drive and close the door. Now, turn on the monitor and turn on the computer.

9. Follow the directions on the screen using the keys on the keyboard and the palette or main menu will appear on the screen. For this lesson, we will limit the menu to these comands: "DRAW" and "LINE". We will place no limit on the "BRUSH" command.

10. "Let's begin with the "DRAW" command." Press the stylus on the pad and place the cursor on the screen to "DRAW". With your other hand, press the top left button of the Koala pad. The screen will become a blank page ready for you to draw on. Now, press the stylus onto the pad and see the cursor appear on the blank screen.

11. Continue to press the top left button of the pad and draw with the stylus. To discontinue a line, lift your finger or stylus from the top left button and find a new place to start with the cursor. Again, see the cursor and press the top left button to begin the next line.

12. Students can create their border design using all similar style lines, different lines, or can use repeated objects or forms drawn with lines.

Summary:

1. Line was used historically to decorate the border and margin areas of printed pages. Art Nouveau was the name given to a linear style of French art which used flourishing curved lines to decorate art and architecture.

2. Art Deco was the name given to a linear style of American art which used diagonal and zigzag line to design art and architecture. Today, graphics is the name used to describe art used to decorate the computer page.

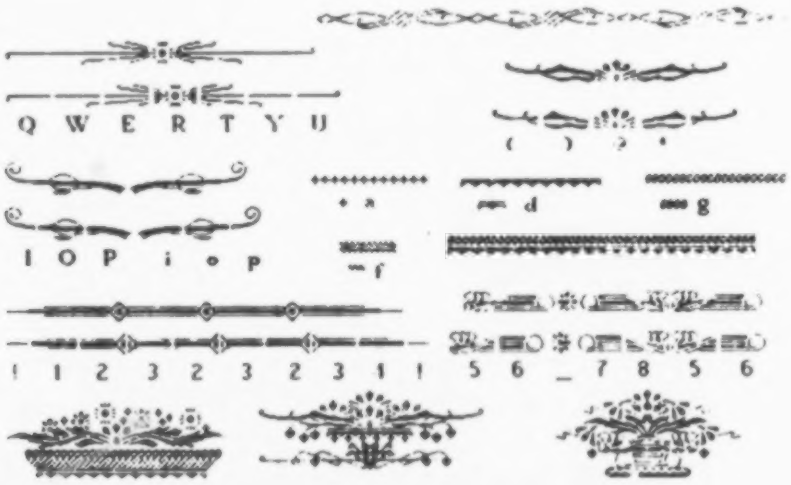
Homework/Assignment

To create a border which is typical of either the Art Nouveau or Art Deco style, or to create a border design which concerns itself with the art of the new - computer art. The student may put into practice all the elements of line learned to this point.

Extra:

Create the border for a diamond stone, using line to represent gold wire. The border or setting can be symmetrical or asymmetrical. The student is to save the drawings on a formatted data disk. The student is to document the drawing by naming it with student's last name and class, and name drawing "border". Make a print-out.

Note: For ERASERHEADS - There are various ways to erase. You can erase the whole screen by touching the pressure sensitive pad with your finger or the stylus to move the cursor to "ERASE" and follow the instructions by choosing the color you wish the screen to turn to. You can erase a single line by changing the color to the background color and (a) try to recreate the line to be erased with a thicker brush or (b) change the command to "BOX" and "black box" the line area out.



## *TOPIC 100: Lettering*

Performance Objectives: Students will be able to:

- select various lettering styles
- identify Roman, Gothic and Novelty lettering; judge spacing and placement

Aim: To discover and work with the design elements of lettering styles

Materials:

16 IBM computers for 32 students
Fontrix software and style selection disks
Short poem from home, must be brought to class

Motivation:

Show several items, where the focus is on the lettering or where the lettering correlates to the idea visually. Some examples may include:

- formal invitations
- circus posters
- advertisements
- book jackets
- album covers

Development:

Refer to page 11, "Introductory Art in the High School."

Letters may be grouped by their shape or construction.
Some are curved, diagonal, vertical and curved, diagonal and horizontal, horizontal and vertical or vertical diagonal.

- Name several letters that would fit into each of these categories.

| | |
|---|---|
| curved | c g o q s |
| diagonal | x v |
| dia/hor | a z |
| ver/cur | b d j p r u |
| ver/dia | k m n w y |
| ver/hor | e f h i l t |

Letters can be traced back to ancient times and through history they have taken on particular characteristics that reflect the thinking of the time. BLOCK letters are called Gothic; letters with serifs and thick and thin lines are called ROMAN; and finally letters that do not fit any of these characteristics would fall into the group called NOVELTY

When we work with lettering, the spacing is usually judged by the artist optically, that is, by eye. A guide to helping you judge the placement of letters is the shape of the letter itself and the shape of the letter next to it.

Application:

How can lettering create a mood?

Can the artist achieve particular images or effects by using lettering?

What is meant by saying: lettering styles should be selected so that they are appropriate to their function.

How can lettering become part of a design?

Explain how size and shape of lettering affect the aesthetics of the design.

Summary:

What are the characteristics of Roman letters?
Would measuring be a good method of determining letter placement? Why? Why not?
The style of lettering found on a circus poster falls into which category of lettering?

Assignment:

HOMEWORK: collect and organize different lettering styles and sizes in a small booklet. These may be found in magazines, newspapers, old posters, invitations etc.

CLASSWORK: create a design using various lettering styles of one letter. You may use the letter in any direction, size or scale. Refer to your homework collection as a guide.

SUPER ASSIGNMENT: create your own lettering style, follow the guidelines set for all other letters. This may be computer enhanced with Fontrix which allows for creative lettering.

# ART PROGRAMS IN BASIC

## *TOPIC 101: Commercial Art*

### Performance Objective - Students will be able to:

- create a balanced design using geometric shapes, color and letters
- learn the commands for line, circle and box
- write simple programs in Basica using these commands

**Aim:** To Design the Cover of a Book, Record Album Cover or Poster, Using the IBM PC and Basica Commands in Simple Programs

### Materials

- One IBM PC for each pair of students
- One formatted diskette with Basica for each student
- One pixel chart for each student
- Blank paper and pencil for each student

### Motivation

Examples of design for book covers, title pages, album covers and posters are displayed in front of the room. The students are asked which are symmetrical, which are asymmetrical, and which are radial in organization. They are asked where the center of interest was in each design and how this was achieved.

### Development

1. the teacher demonstrates at the board, by drawing "thumbnail" sketches of several arrangements

2. the compositions are discussed in terms of emphasis, contrast, rhythm and unity

3. geometric shapes such as circles, and rectangles are used

### Worksession

1. Students are to draw two or more thumbnail sketches for the design.

2. The composition chosen is then enlarged on a blank paper inside of a rectangle the size of the pixel chart which represents the screen.

3. The chart is then placed underneath the drawing in order to find the coordinates of each point in the design (such as the center of a circle)

4. The coordinates are x(points across) and y(points down).

5. Pixels are points on the screen.

6. Programs begin with a line to set the screen and colors, as follows:

```
10 screen 1:  cls: key off: color a, b (a refers to the background
                                        color, and b to the palette number)
```

7. Background Colors:

0 black
1 blue
2 green
3 light blue
4 red
5 magenta
6 brown
7 white
8 grey

Foreground Colors:

| Palette 0 | | Palette 1 | |
|---|---|---|---|
| 1 | green | 1 | light blue |
| 2 | red | 2 | magenta |
| 3 | brown | 3 | white |

Example: color 0, 1 means black background with palette 1)

8. Circle

Circle(center point), radius, color

Example: circle (160, 100), 85, 2 means a circle with its center at center screen, a radius of 85 pixels, drawn in magenta, which is color 2 under palette 1.

9. Line

Line (beginning - (end), color, box(b) or boxfill (bf)

Example: line (20,20) - (40,40), 3, b means: a box is drawn with its diagonal beginning at 20,20 and ending at 40,40; drawn in white, which is color 3 in palette 1.

10. Paint

Paint (x,y), color of paint, color of boundary of shape. The coordinates refer to any point within a closed shape, with boundary lines of the same color.

Example: (to paint the circle)
Paint (160,100), 1, 2 will paint the circle in light blue

11. Programming
- every line has a line number (10, 20, 30, etc.)
- after typing each line hit return
- F1 lists program
- F2 runs
- F3 loads program
- F4 saves picture under a title of no more than 8 characters
- type "Basica" to begin, then type files, then F3 and name of program you wish to see

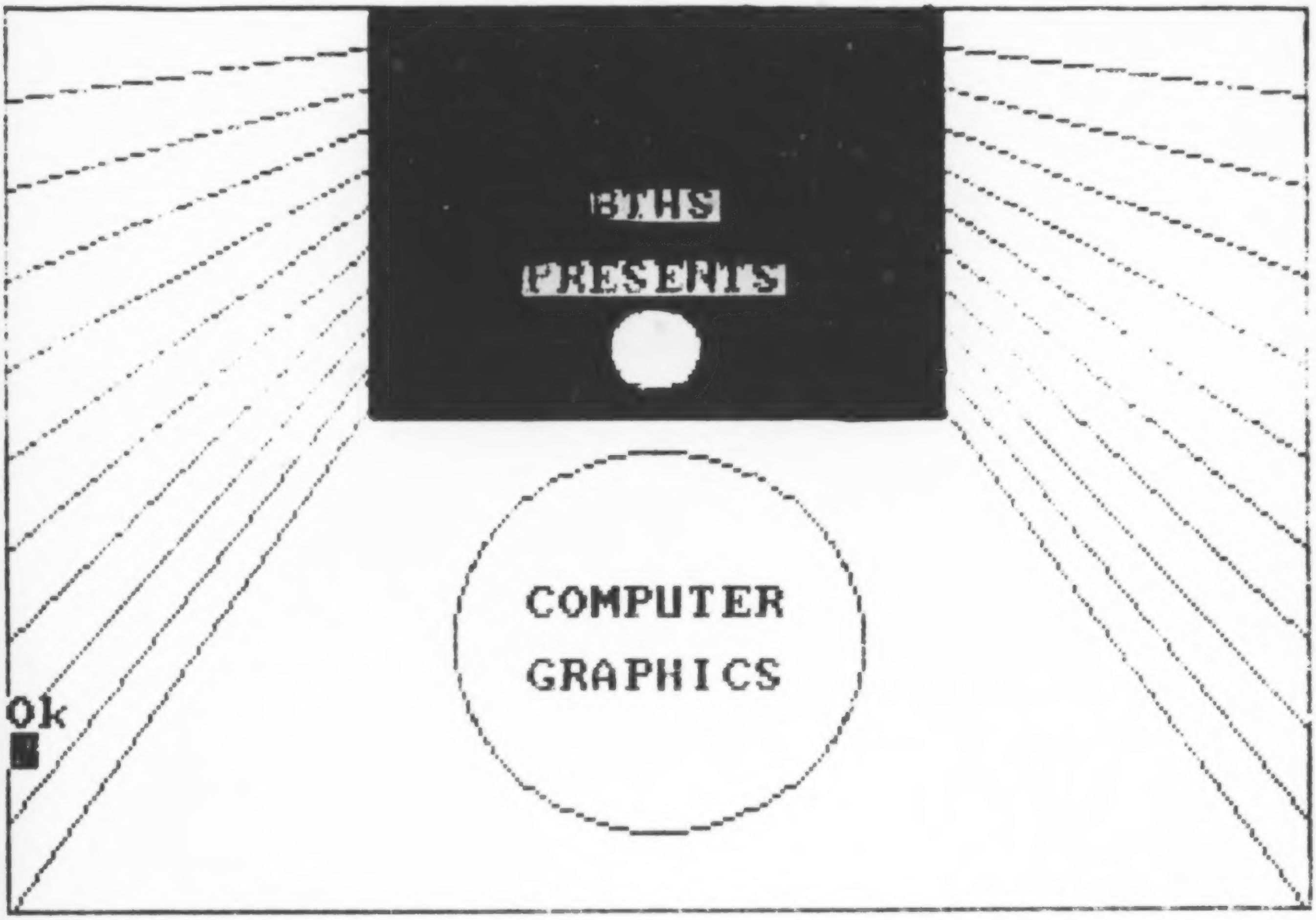
12. Lettering

- Locate y, x refers to cursor jumps down and across. This is found by counting jumps down with the arrow and across with the space bar. The point at y, x is the beginning of the word you wish to type.

- Print refers to the word you wish to print.

Example:

```
locate 5,11
print "Computer Graphics"
```


BTHS
PRESENTS
COMPUTER
GRAPHICS
Ok

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| $0_{0}$ | $20_{0}$ | $40_{0}$ | $60_{0}$ | $80_{0}$ | $100_{0}$ | $120_{0}$ | $140_{0}$ | $160_{0}$ | $180_{0}$ | $200_{0}$ | $220_{0}$ | $240_{0}$ | $260_{0}$ | $280_{0}$ | $300_{0}$ | $319_{0}$ |
| $0_{20}$ | $20_{20}$ | $40_{20}$ | $60_{20}$ | $80_{20}$ | $100_{20}$ | $120_{20}$ | $140_{20}$ | $160_{20}$ | $180_{20}$ | $200_{20}$ | $220_{20}$ | $240_{20}$ | $260_{20}$ | $280_{20}$ | $300_{20}$ | $319_{20}$ |
| $0_{40}$ | $20_{40}$ | $40_{40}$ | $60_{40}$ | $80_{40}$ | $100_{40}$ | $120_{40}$ | $140_{40}$ | $160_{40}$ | $180_{40}$ | $200_{40}$ | $220_{40}$ | $240_{40}$ | $260_{40}$ | $280_{40}$ | $300_{40}$ | $319_{40}$ |
| $0_{60}$ | $20_{60}$ | $40_{60}$ | $60_{60}$ | $80_{60}$ | $100_{60}$ | $120_{60}$ | $140_{60}$ | $160_{60}$ | $180_{60}$ | $200_{60}$ | $220_{60}$ | $240_{60}$ | $260_{60}$ | $280_{60}$ | $300_{60}$ | $319_{60}$ |
| $0_{80}$ | $20_{80}$ | $40_{80}$ | $60_{80}$ | $80_{80}$ | $100_{80}$ | $120_{80}$ | $140_{80}$ | $160_{80}$ | $180_{80}$ | $200_{80}$ | $220_{80}$ | $240_{80}$ | $260_{80}$ | $280_{80}$ | $300_{80}$ | $319_{80}$ |
| $0_{100}$ | $20_{100}$ | $40_{100}$ | $60_{100}$ | $80_{100}$ | $100_{100}$ | $120_{100}$ | $140_{100}$ | $160_{100}$ | $180_{100}$ | $200_{100}$ | $220_{100}$ | $240_{100}$ | $260_{100}$ | $280_{100}$ | $300_{100}$ | $319_{100}$ |
| $0_{120}$ | $20_{120}$ | $40_{120}$ | $60_{120}$ | $80_{120}$ | $100_{120}$ | $120_{120}$ | $140_{120}$ | $160_{120}$ | $180_{120}$ | $200_{120}$ | $220_{120}$ | $240_{120}$ | $260_{120}$ | $280_{120}$ | $300_{120}$ | $319_{120}$ |
| $0_{140}$ | $20_{140}$ | $40_{140}$ | $60_{140}$ | $80_{140}$ | $100_{140}$ | $120_{140}$ | $140_{140}$ | $160_{140}$ | $180_{140}$ | $200_{140}$ | $220_{140}$ | $240_{140}$ | $260_{140}$ | $280_{140}$ | $300_{140}$ | $319_{140}$ |
| $0_{160}$ | $20_{160}$ | $40_{160}$ | $60_{160}$ | $80_{160}$ | $100_{160}$ | $120_{160}$ | $140_{160}$ | $160_{160}$ | $180_{160}$ | $200_{160}$ | $220_{160}$ | $240_{160}$ | $260_{160}$ | $280_{160}$ | $300_{160}$ | $319_{160}$ |
| $0_{180}$ | $20_{180}$ | $40_{180}$ | $60_{180}$ | $80_{180}$ | $100_{180}$ | $120_{180}$ | $140_{180}$ | $160_{180}$ | $180_{180}$ | $200_{180}$ | $220_{180}$ | $240_{180}$ | $260_{180}$ | $280_{180}$ | $300_{180}$ | $319_{180}$ |
| $0_{199}$ | $20_{199}$ | $40_{199}$ | $60_{199}$ | $80_{199}$ | $100_{199}$ | $120_{199}$ | $140_{199}$ | $160_{199}$ | $180_{199}$ | $200_{199}$ | $220_{199}$ | $240_{199}$ | $260_{199}$ | $280_{199}$ | $300_{199}$ | $319_{199}$ |

264

```
10 SCREEN 1:CLS:KEY OFF:COLOR 0,1
20 LINE (160,0)-(0,20),3
30 LINE (160,0)-(0,40),3
40 LINE (160,0)-(0,60),3
50 LINE (160,0)-(0,80),3
60 LINE (160,0)-(0,100),3
70 LINE (160,0)-(0,120),3
80 LINE (160,0)-(0,140),3
90 LINE (160,0)-(0,160),3
100 LINE (160,0)-(0,180),3
110 LINE (160,0)-(0,200),3
120 LINE (160,0)-(319,20),3
130 LINE (160,0)-(319,40),3
140 LINE (160,0)-(319,60),3
150 LINE (160,0)-(319,80),3
160 LINE (160,0)-(319,100),3
170 LINE (160,0)-(319,120),3
180 LINE (160,0)-(319,140),3
190 LINE (160,0)-(319,160),3
200 LINE (160,0)-(319,180),3
210 LINE (160,0)-(319,200),3
220 LINE (90,0)-(230,90),3,BF
230 LOCATE 8,I7
240 PRINT "PRESENTS"
250 LOCATE 6,19
260 PRINT "BTHS"
270 CIRCLE(160,140),50,3
280 LOCATE 17,17
290 PRINT "COMPUTER"
300 LOCATE 19,17
310 PRINT "GRAPHICS"
320 PAINT (160,140),2,3
330 LINE (0,0)-(319,199),3,B
340 CIRCLE(160,75),10,0
350 PAINT(160,75),0,0
```

## *TOPIC 102: Creating a Symmetrical Design for a Name Plate Using Lettering and Characters*

Performance Objectives: Students will be able to:

- use LOCATE statements on the IBM PC and Tandy 1000 and HTAB/VTAB statements on the Apple IIe to place lettering and shapes in specific positions on the screen (basic programming statements)
- design a name plate using lettering and graphic characters in a symmetrical configuration

Aim: How can you create a symmetrical design by placing lettering and shapes locations on the screen through Basic programming techniques?

Materials:

- 17 IBM PC, Tandy 1000 or Apple IIe computers with color or monochrome monitors
- 3 daisy wheel or dot matrix printers
- 34 initialized disks for Apple IIe
- 34 initialized disks for IBM PC or
- 34 DOS/File disks for Tandy 1000

Motivation:

1. Distribute graph paper or xerox sheets with at least 25 x 40 boxes.

2. Find the center box on your grid? Mark it. At what coordinates is this box?

3. The computer monitor screen is divided into pixels (picture elements).

4. Teacher to draw a similar grid on board and demonstrate the center.

5. Teacher also to explain the methods for finding specific positions on the screen for Tandy and IBM and Apple (separate lesson for Apple following.)

Development: Tandy 1000 and IBM PC

1. Where is the center of the screen for the 24 x 80 format? (12 pixels down, 40 pixels across - 12, 40)

2. How could we locate a * in the center of the screen by programming rather than just placing it here?
   a) 10 screen 0: key off: cls
   b) 20 width 80
   c) 30 locate 12, 40
   d) 40 print "*"
   e) Hit F2 or run

3. Where is the * placed?

Notes to teachers:

a) in text mode (screen 0) on the IBM and Tandy you count 12 down first and then 40 across (the y axis before the x axis)
b) remember, if you add line 50 goto 50 in the above program the cursor will be hidden and therefore will not print
c) boot the machine; students to work along
d) how can you write your name in the middle of the screen
e) how do you calculate the spacing (a five letter name in the center of the screen will be placed at 12, 38 - locate 12, 38)

4. What will this program do? (write on board)
   a) 10 screen 0:  key off:  cls
   b) 20 width 80
   c) 30 locate 12, 38
   d) 40 print "Jones"
   e) 50 locate 12, 10
   f) 60 print "*"
   g) 70 locate 12,70
   h) 80 print "*" (name will be centered with *, s at either end on the same row)

5. What are character strings CHR$( )?
   a) character strings are 255 symbols, many graphic and not visible on the keyboard which are useful in drawing on the computer - i.e., CHR$(4) =
      CHR$(169) =
      CHR$(219) =

   b) new

```
10 screen 0:  key off:  cls
20 width 80
30 locate 12, 40
40 print CHR$(219)          'no quotes necessary  (a   will be
                             printed in the middle of the screen)
```

Notes to teachers:

a) check all character string symbols in IBM PC or Tandy 1000 manual. You might want to xerox the page for student reference
b) if there is a character string wheel available for your daisy wheel printer you will be able to print these characters.  Otherwise grade work from monitor or take slides

<u>Worksession for Tandy 1000 and IBM PC:</u>

1. Students to experiment with LOCATE statements placing characters from the keyboard and character strings around the screen.

2. Students to design name plates with symmetrical surrouding designs on graph paper.

3. Students to write programs using LOCATE and PRINT statements to create a name plate with name in center and text character symbols and/or character string symbols in symmetrical pattern around the name.
4. Individual instruction.

## Development: Apple IIe

1. Where is the center of the screen for the 24 x 40 format? (20, 12 - 20 pixels across, 12 pixels down.)

2. How could we locate an * in the center of the screen by programming rather than just placing it there?
   a) 10 home
   b) 20 HTAB 20: VTAB 12
   c) 30 print "*"
   d) RUN

3. Where is the * placed?

Notes to teachers:
   a) on the Apple IIe you count 20 across first, then 12 down
   b) remember, if you add line 40 goto 40 in the above program the cursor will be hidden and therefore will not print
   c) there might be an 80 column card that accepts HTAB but not most
   d) boot machine see lesson #1 students to work along
   e) how can you write your name in the middle of the screen
   f) how do you calculate the spacing (a five letter name in the center of the screen will be placed at 18, 12 - HTAB 18: VTAB 12)

4. What will this program do? (write on board)
   a) 10 home
   b) 20 HTAB 18: VTAB 12
   c) 30 print "Jones"
   d) 40 HTAB 10: VTAB 12
   e) 50 print "*"
   f) 60 HTAB 31: VTAB 12
   g) 70 print "*"
   h) RUN (name will be centered with *'s at either end of same row)

Notes to teachers:
   a) each HTAB/VTAB line must be followed by a print statement line
   b) there are 127 character stings on the Apple, however the graphic symbols are not as extensive as on the Tandy/IBM
   c) look in the Apple manual to determine whether you think this is worth teaching for the Apple

5. Character string symbols are used in the following way:
   a) 10 home
   b) 20 PR#3
   c) 30 HTAB 40: VTAB 12
   d) 40 print CHR$(63) (no quotes necessary; a ? wil be printed in the middle of the screen)

Worksession for Apple:

1. Students to experiment with HTAB/VTAB statements placing characters around the screen.

2. Students to design name plates with symmetrical surrounding designs on graph paper.

3. Students to write program using HTAB/VTAB statements and PRINT statements to create a name plate with name in center and character symbols in symmetrical pattern around the name.

4. Individual pattern.

Summary:

1. How do you locate designs and lettering in specific positions on the screen?

2. What is a symmetrical design?

Application:

1. Design a large business card using LOCATE statements (IBM and Tandy) and HTAB/VTAB statements (Apple).

2. Reduce the card to business card size on a xerox machine.

Assignment:

1. Draw a symmetrical design using some of the character symbols found on the computer.

2. Do this design in colored markers.

## *TOPIC 103: Using Scrolling as a Means of Creating Simple Animation*

Performance Objectives: The students will be able to:

- write a Basic program
- draw an original spaceship in text mode
- use scrolling as a means of creating simple animation

Aim: How can you draw a spaceship and make it fly off the screen?

Materials:

- 17 IBM PC, Tandy 1000 or Apple IIe computers with color or monochrome monitors
- 3 daisy wheel or dot matrix printers
- 34 initialized disks for Apple IIe
- 34 initialized disks for IBM PC or
- 34 DOS/File disks for Tandy 1000

Motivation:

1. How can we make objects move on a computer?

2. What is the main use of animation?

3. How was animation done before the computer?

Development:

1. How can you design your own spaceship using computer symbols? (student demonstration on the board)

2. Demonstration by the teacher on the board or distribute xerox of spaceship animation. (Apple 10 home)

```
a)  10 screen 0: key off: cls
b)  20 for x = 1 to 17
c)  30 print                            'these three lines print
d)  40 next x                            17 blank lines so that
e)  50 print "                    "      the spaceship is drawn
f)  60 print "                    "      at the bottom of the
g)  70 print "                    "      screen and can scroll up
h)  80 print "                    "
i)  90 print "                    "
j)  100print "
k)  110 for t = 1 to 23
l)  120 for y = 1 to 40                 'lines 110-150 slows down
m)  130 next y                           the speed of the spaceship
n)  140 print
o)  150 next t
```

Notes to teachers:

a) line 20 can be written

```
20 for x = 1 to 17:  print:  next x
```

b) line 110 can be written

```
110 for t = 1 to 23:  for y = 1 to 40:  next y:  print: next t
```

c) boot machines

### Worksession:

1. Students to design spaceships.
2. Individual instruction.

Note to teachers:
You can save animation, but you can only print the stationary picture

### Summary:

1. What is animation?
2. How did we animate our spaceship?
3. Which lines in the program moved your spaceship down the screen?
4. Which lines in your program slowed down the speed of the movement?

### Application:

1. Draw a spaceship. Add a long tail of smoke.
2. Students can add color for the Tandy 1000 and IBM PC by adding a color statement to line 10
   a) `10 screen 0:  key off:  color 11: cls` (light cyan)

### Assignment:

1. Draw more spaceships that you could possibly convert into computer drawings.
2. Draw a fleet of spaceships.

## *TOPIC 104: Creating Simple Animation Using Locate or HTAB/VTAB Statements*

Performance Objectives: Students will be able to:

- draw small objects such a cars, planes, and boats in text mode
- use locate statments on IBM and Tandy and HTAB/VTAB statements on Apple to animate objects across the screen

Aim: How can you draw a car, boat, airplane or person and make the object move across the screen? (must be done in conjunction with lesson #103.)

Materials:

- 17 IBM PC, Tandy 1000 or Apple IIe computers with color or monochrome monitors
- 3 daisy wheel or dot matrix printers
- 34 initialized disks for Apple IIe
- 34 initialized disks for IBM PC or
- 34 DOS/File disks for Tandy 1000

Motivation:

1. We have already make objects move upward off the screen.
2. In what other directions can we animate?

Development:

1. Demonstration by teacher on the board.
2. How to make objects move across the screen from right to left.

Tandy and IBM

```
10 screen 0;  key off:  cls
20 for c= 1 to 40                         'moves across horizontally
30 print "          "
40 print "          "
50 print "          "
60 print "          "
70 print "          "

after line 70 add
25 locate 1,c                             'will move across to
35 locate 2,c                              40 at vertical positions
1-5
45 locate 3,c
55 locate 4,c
65 locate 5,c

80 CLS                                    'erases and redraws
object
90 next c
```

```
F1 or list                                'lines 25-65 will be
put in
F2 or run                                  proper order
```

Notes to teachers:

- a) to move across 80 columns add line 15 width 80 change line 20 to for c = 1 to 80
- b) do not make objects much larger than above or they will move too slowly
- c) students can change line 20 to for c = 80 to 1 step - 1 to move objects from right to left

Apple

```
10 home
20 for c = 1 to 34                        (animate only 40 columns
on Apple)
30 HTAB C:  VTAB 0:print"         "
40 HTAB C: print       "          "
50 HTAB C: print       "          "    'animate at vertical
position
60 HTAB C: print       "          "     10
70 HTAB C: print    "                "
80 home
90 next c
```

Notes to teachers:

- a) do not make objects much larger of they will move too slowly
- b) students can change line 20 to for c = 34 to 1 step - 1 to make objects move from right to left
- c) the colons are used instead of extra line numbers

Worksession:

1. Students to design small objects to be animated.

2. Students to write animation programs.

3. Individual instruction.

Summary:

1. What computer terms must you know in order to create animation?

2. Review demonstration lesson.

Acceleration:

Students can add line 15 and line 100 on all machines 15 for k = 1 to 5;  100 next k this will move the objects across the screen five times.

__Assignment__:

Design other small objects suitable for horizontal animation.

Additional animation projects for IBM and Tandy:

How to make an object move diagonally

```
10 screen O: key off: cls
20 for J = 1 to20
30 locate J, J                             '2 variables
40 print "*"
50 cls
60 next J
```

How to make an object fall

```
10 screen O: key off: cls
20 for R = 1 to 20
30 locate R, 40
40 print "*"
50 cls
60 next J
```

__for Apple__

Diagonal animation

```
10 home
20 for J = 1 to 20
30 HTAB J:  VTAB J
40 print "*"
50 home
60 next J
```

Falling Objects

```
10 home
20 For R = 1 to 20
30 HTAB 40: VTAB R
40 print "*"
50 home
60 next R
```

## TOPIC 105: Drawing in Text Mode -- A Guide for Teachers

Art teachers do not need to know computer programming in order to teach students how to write simple graphics programs. A few key Basic terms will allow teachers and students to easily draw on the Apple, the IBM PC and the Tandy 1000.

Try this program

```
10 screen 0:  key off:  cls       (on the Apple this line is home clears screen)
20 print " ******************"
30 print " *      name      *"
40 print " ******************"    you must hit the carriage return after each
50 goto 50                        line -- the cursor should return to the
                                  left margin
```

Hit the F2 function key or type run. You should see your drawing without the program. To return to the program, you hit the F1 function key or type list.

YOU HAVE NOW WRITTEN YOUR FIRST PROGRAM. IT'S AS SIMPLE AS THAT AND THE POSSIBILITIES ARE ENDLESS.

Notes:

1. Screen 0 means that you are in text mode on IBM and Tandy
2. Key off removes the key on the 25th line from the screen
3. CLS clears the screen on Tandy and IBM
4. On the Apple line 10 is home to clear the screen
5. Each line must have a line number in ascending order. Numbers are skipped so that lines may be added into the program.
6. A print statement is the command which will write on the screen a character or number within the quotation marks. On the IBM and the Tandy, all left hand quotes must be lined up under one another.
7. Make sure you hit the carriage return before starting each new line number.
8. line 50 goto line 50 creates an endless loop. when printing graphics this is useful-- the cursor is hidden and doesn't print.
9. Hit F1 or type list and your program will return so you can continue working on it-

   add line 45 after line 50

   ```
   45 print "***************"
   ```

   hit F1 or type list again and you will see line 45 automatically put into proper position.
10. You can make changes, corrections and additions by using the edit keys. On the IBM and the Tandy, move the edit key to the position where you want the change. Erase with the space bar. Hit the carriage return as many times as necessary until you're at the end of the program. On Apple, it is necessary to hit Escape (ESC) before editing. Check manuals for details on editing techniques. An easy way for beginners to make corrections is to totally retype the faulty line at the bottom of the program. List and the corrected line will replace the old line.

11. To work in color on the Tandy and IBM, add line 15 (no color in text mode on Apple) 15 color 4. Check manuals for other color codes

12. Before you begin a new program, make sure you type NEW.

## HOW TO SAVE AND PRINT PROGRAMS

If you do not save a program on a diskette, it will be lost when you turn the computer off.

I- To save a program hit F4 or type save

SAVE "name" (on the Apple the quotation mark is not necessary) name your program -- at least 2 letters, no more than 8 letters-- i.e. house)

Hit carriage return. Wait for the red light to go off and the program is saved on the diskette.

II- To retrieve (load) a program that has been saved, hit F3 or type LOAD "name" (On the Apple the quotation mark is not necessary). Hit carriage return and wait for the red light to go off. Hit F2 or type run and your program will appear on your screen.

III- If you forget the name of your program on IBM and Tandy, type files; on Apple, type Catalog -- a list of all your programs will appear.

IV- To print a program --
If you are at a computer which is attached to a printer, you can draw in text mode and screen dump without writing a program. Anything which is drawn or written on the screen can be printed. You must write a program in order to save work.

Students at computers without printers save work on diskettes and load into computers attached to printers. Load and run program -- Hit Print-Shift on Tandy; PR SC on IBM; PR#1 on Apple- see computer and printer manuals for printing details.

# *TOPIC 106: Using Fill Statements to Create Box Designs*

Performance Objectives: Students will be able to:

- create Mondrian-like box designs using box and box fill statements of the IBM PC and Tandy 1000 computers
- print designs on dot matrix printers in positive or reverse mode

Aim: How Can You Create Designs Using Outlined and Filled Boxes on the IBM PC and Tandy 1000 in screen 1 medium resolution graphics?

Materials

17 IBM PC or Tandy 1000 computers with monochrome or color monitors
3 dot matirx printers
34 formatted disks for IBM PC or 34 DOS/file disks for Tandy 1000
(you must add CONFIG.SYS to Tandy 1000 DOS to make it IBM compatible for advanced graphics) see Tandy manual.

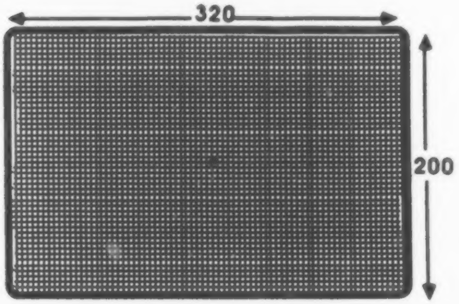
Motivation:

Exhibit Mondrian paintings and drawings
Discuss the evolution from abstract to non-objective art

Development:

- teacher demonstration on board

How Can We Plot Points in Medium Resolution Graphics (screen 1)?



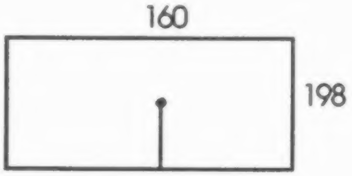
the center is at 160,000, count across, then down x,y)

(Have the class plot points on the board PSET (50, 50), PSET (318, 198)

How Can You Draw Lines?

- teacher demonstration on board

```
10 screen 1:  key off:cls
20 line (160, 100) - (160, 198)
```



(This will draw a vertical line at 160 down 98 pixels) (Line takes the place of PSET)

Boot machines - boot in basic for Tandy 1000; in BASICA for IBM PC

How Can You Draw These Lines? (Students to work along)

```
line (100, 20) - (100, 60)
line (100, 20) - (120, 80)
```

How Can You Draw a Box?

(plot upper left-hand corner and lower right-hand corner)

```
New
10 screen 1: key off:  cls
20 line (50, 100) - (80, 140), 3, B
```

(,3, B will make a box)
(,, BF will fill a box)

How Can You Save and Load Your Programs (review)?

How Can You Print Your Design on a Dot Matrix Printer?
Check manual (printer) for settings. When A> comes up when booting machine attached to printer, type in graphics if you are working on a Tandy 1000 or graphic.com if you are working on a IBM PC Wait for instructions. For reversal - white lines on black background type graphics/R.

### Worksession

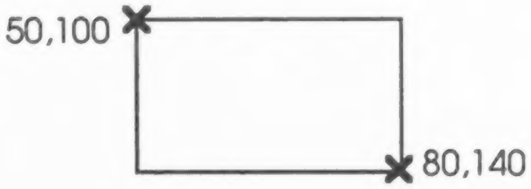
Students to experiment

- plotting points
- drawing lines
- drawing boxes
- drawing filled boxes

Students to draw designs using box and box fill statements
Students to print designs in regular or reverse mode

### Summary

Review line and box statements
Class critique of box designs



### Application

Students to draw box designs in color on IBM PC with color monitor

```
10 screen 1: key off: color 4, 0: cls   (foreground color red)
20 line (50, 100), (80, 140), 1, BF     (blue foreground)
30 line (120, 130), (140), 180), 3, BF  (green foreground)
```

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Note to teachers:

- see color charts in IBM PC and Tandy 1000 manuals or next page
- color 4,0 sets background color and indicate that foreground color will come from pallette 0

Assignment

Make a painting in tempera or acrylic paint based on your box and fill box computer design

Note to teachers:

There is also a screen 2 for IBM PC and Tandy 1000 high resolution graphics. There are 640 x 200 pixels which allows for more drawing area; however, there are no color options, you can only draw in black and white using the same commands as in screen 1 (medium resolution graphics)

Color

Foreground colors in text mode; background colors 0-7

- 0 black
- 1 blue
- 2 green
- 3 cyan
- 4 red
- 5 magenta
- 6 brown
- 7 white
- 8 gray
- 9 light blue
- 10 light green
- 11 light cyan
- 12 light red
- 13 light magenta
- 14 yellow
- 15 bright white

(colors may vary depending on monitor)

Add color to graphics statement

10 screen 1: key off: color 4, 8: cls (color 2 is the background color green from list above; the one means you will choose a color from pallette 1)

| pallette 0 | | pallette 1 | |
|---|---|---|---|
| green | 1 | cyan | 1 |
| red | 2 | magenta | 2 |
| brown | 3 | white | 3 |

```
10 screen 1:  key off: color 2,1: cls
20 line (160, 100), (180, 120), 2, BF
```

(The background color is green; the box will fill with color 2 magenta from pallette 1)

## *TOPIC 107: Creating Circle Designs on the IBM PC or Tandy 1000*

Performance Objectives: Students will be able to:

- use the circle commands of the IBM PC and Tandy 1000 computer
- compose a design using circles and concentric circles of varied sizes
- print designs on a dot matrix printer in regular or reverse mode
- create a record album cover using cut lettering over the computer printout

Aim: How Can You Make Circle Designs on the IBM PC and Tandy 1000?

### Materials

17 IBM PC or Tandy 1000 computers with monochrome or color monitors
3 dot matrix printers
34 formatted disks for IBM PC or 34 DOS/file disks for Tandy 1000
(you must add CONFIG.SYS to Tandy 1000 DOS to make it IBM compatible for advanced graphics) see Tandy manual.

### Motivation

- Exhibit Kupka, Kandinsky, Delaunay and Hartley paintings
- Discuss circles and their importance in non-objective art
- Exhibit circle designs found in advertising

### Development

Demonstration by teacher on board

1. How Can You Draw Circles on the Tandy 1000 and IBM PC in medium resolution graphics?

```
10 screen 1:  key off: cls
20 circle (160, 100), 5
```

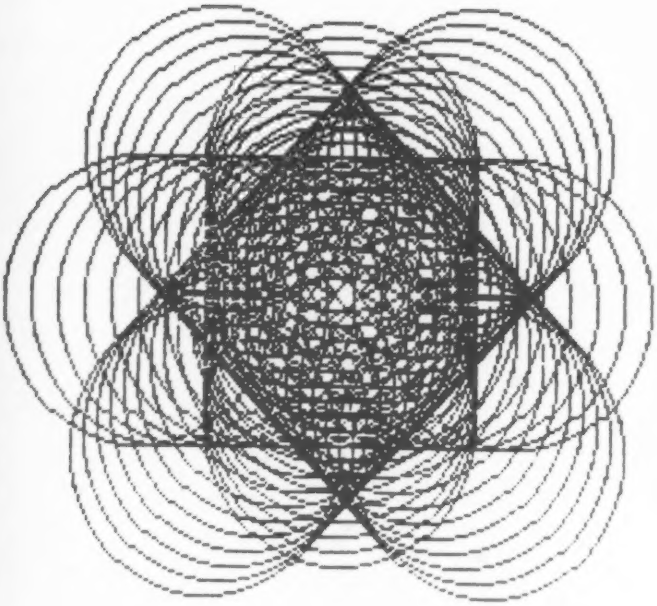
circle (160, 100) places a circle with a radius of 5 pixels at point 160, 100 on the grid

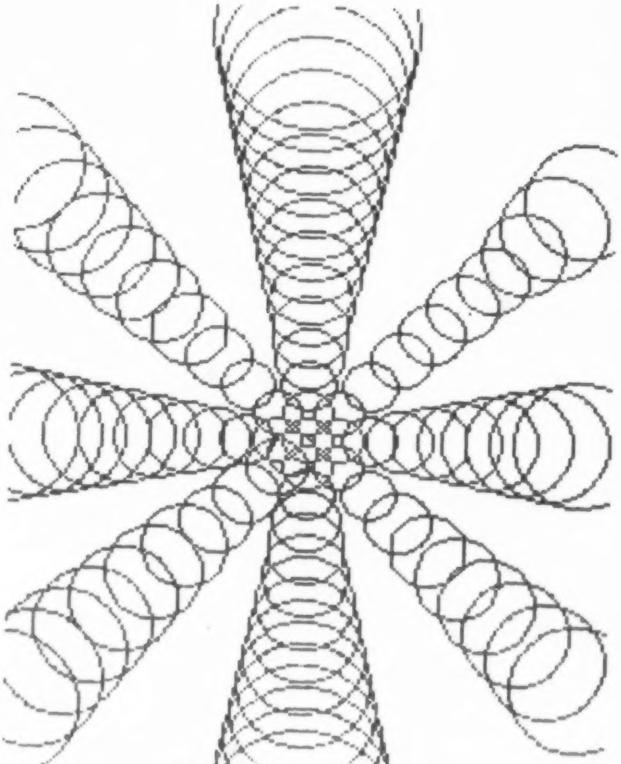
```
30 circle (100, 120), 10
```

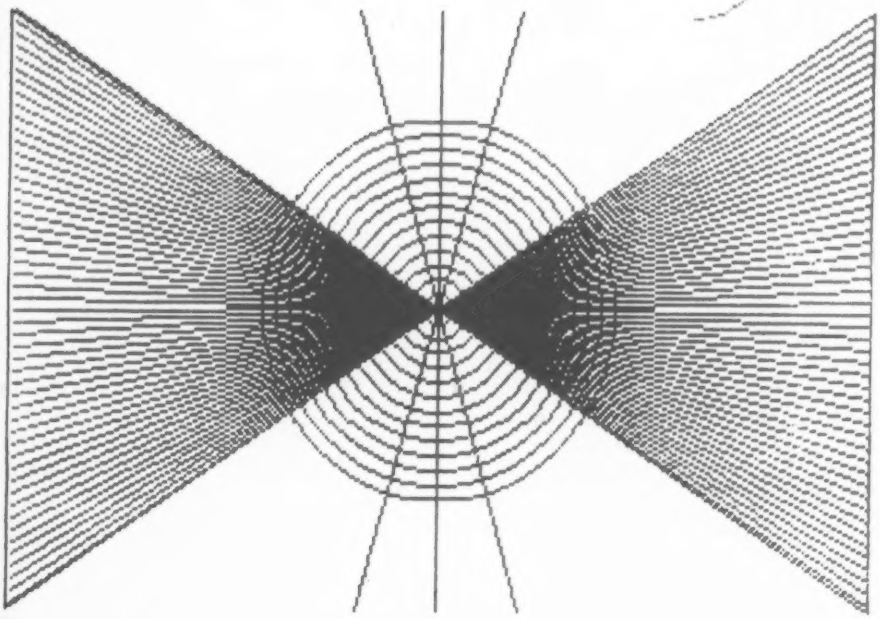
circle (100, 120) places a circle with a radius of 10 at 100, 120

2. How Can You Draw Concentric Circles?

```
New
10 screen 1:  key off: cls
20 circle (160, 100), 5
30 circle (160, 100), 10
40 circle (160, 100), 15, etc.
```







(The above is an easy way to draw concentric circle; however, in BASIC, the proper way follows)

```
10 screen 1:  key off: cls
20 for x = 5 to 50 step 5       counts from 5 to 50 by 5's
30 circle (160, 100), x
40 next x
```

3. How Can You Draw a Filled Circle?

```
New
10 screen 1:  key off: cls
20 for x = 5 to 100
30 circle (100, 100000000), x
40 next x
```

4. How Can You Draw Circles in Color on the IBM PC?

```
New                                       9-background color
10 screen 1:  key off: color 9, 1: cls    1-foreground color
20 circle (160, 100), 5, 3                  (from pallette 1)
```

## Worksession

1. Students to experiment with circle statements

2. Students to draw designs using varied sizes of circles and/or concentric circles

3. Students to print designs in regular or reverse mode

## Summary

1. Review circle statements

2. Class critique

## Application

Students to combine circle and line statements to create designs

## Assignment

1. Students to cut lettering from colored papter to collage over computer printout to create a record album cover

2. Students to use circle and circle/line designs as motivation for quilting patterns

3. Students to use circle/line designs as motivation for three-dimensional wire designs

## *TOPIC 108: Creating Random Designs on the IBM PC or Tandy 1000*

Performance Objectives: Students will be able to:

- create random box and circle designs using the randomize commands of the IBM PC and Tandy 1000 computers
- print designs at various levels of screen fill by stopping printer action by ctrl-break command
- utilize random designs for fabric patterns
- create planned designs from random designs

Aim: How Can You Draw Random Designs on the Tandy 1000 and the IBM PC?

### Materials

17 IBM PC or Tandy 1000 computers with monochrome or color monitors
3 dot matrix printers
34 formatted disks for IBM PC or 34 DOS/file disks for Tandy 1000
(you must add CONFIG.SYS to Tandy 1000 DOS to make it IBM compatible for advanced graphics) see Tandy manual.

### Motivation

Throw rubber bands or paper clips on a desk or board to create a random design

1. What makes this design different from other designs we have previously done on the computer or in class with other art materials?

2. Are random designs valid?

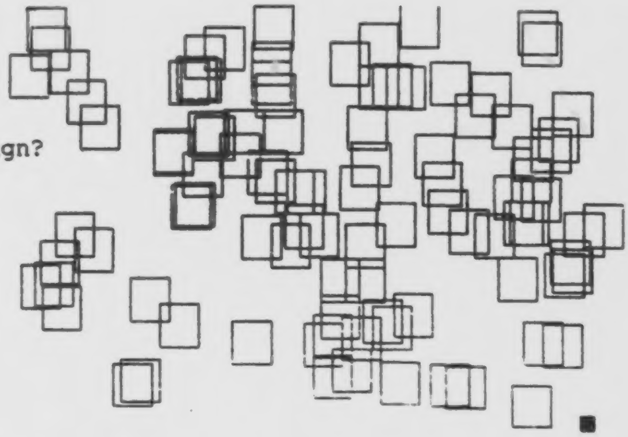
3. Which artists have made use of accidents in their works? (Exhibit Jackson Pollock paintings)

### Development

Teacher demonstration on the board

1. How Can We Draw a Random Box Design?

```
10 screen 1:  key off: cls
20 for x = 1 to 50
30 A=INT(RND(1) * 300) + 1
40 B=INT(RND(1) * 180) + 1
50 line (A,B) - (A+20), 3, B
60 next x
```



Notes to teacher:

a. RND = random
b. INT = integer (is a whole positive number)
c. * = times on the computer
d. you can change sizes of the squares by changing the 300, 180, +1, A+20, B+20

e. ,3,B is the box statement for the Tandy 1000 and IBM PC
f. change line 20 to change the number of random boxes

2. How Can You Draw Random Circle Designs?

```
New
10 screen 1: key off: cls
20 for x = 1 to 50
30 A=INT(RND(1)*300)+1
40 B=INT(RND(1)*100+3
50 circle (A,B), 5
60 next x
```

(Notes above apply to circles as well as squares)

Worksessions

1. Students to experiment with random circles and squares

2. Students to print designs at various levels of screen fill by using the ctrl-break keys to stop screen action

3. Students to print desings in reverse using the Graphics/R mode of the dot matrix printer (See Lesson #1)

Summary

Review random programming techniques

Application

1. Students to combine random circle and square statements to create random circle/square designs

2. Students to work in color

Assignment

Trace segments of random designs to create planned designs

## *TOPIC 109: Drawing Cubes in Medium Resolution Graphics*

Performance Objective: Student will be able to:

- draw using logo DRAW command in medium resolution graphics (screen 1)
- create line drawing of cubes receding in space
- create a cityscape or a still life of boxes on a table
- print drawing on a dot matrix printer

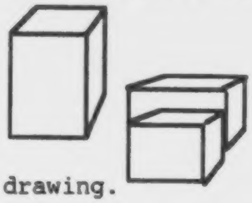
Aim: How Can You Draw Cubes in Line Using the Logo Commands of the IBM PC and Tandy 1000?

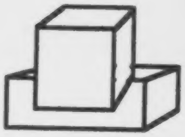
Materials

17 IBM PC or Tandy 1000 computers with monochrome or color monitors
3 dot matrix printers
34 formatted disks for IBM PC or 34 DOS/file disks for Tandy 1000
(you must add CONFIG.SYS to Tandy 1000 DOS to make it IBM compatible for advanced graphics

Motivation:

- Draw cubes on the board receding in space.
- Draw cube incorrectly and let students correct the drawing.
- Discuss ways to make three-dimensional objects recede in space.





Development:

Teacher demonstration

There is another way to draw lines beside LINE on the Tandy and IBM -- the DRAW command

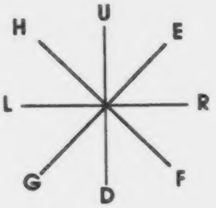
```
10 screen 1:  key off: cls
20 draw "L30"
30 draw "D30"
40 draw "R30"
50 draw "U30"
```

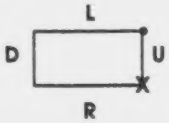
from the center of the screen will draw left 30 pixels, then down, then right, then up

This draws a square -- easier - all in one line

```
20 draw "L30;D30;R30;U30"
```

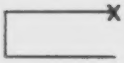
Each line is drawn from the spot the last line ended
You can draw lines in 8 directions





By adding an N to the statement you can return to the point where the last line began

```
50 draw "NU"
```



By using a B command you move without plotting

```
50 draw "BU"
```

By using the BM command you can move the position of the x,y coordinate

```
    add to program
60  draw "BM 50, 75"
70  draw "L40; D40; U40
```

(Remember if you do not use the BM command the drawing will begin at the center of the screen at 160,000)

- Boot machines
- You may want to hand out a rexo of logo directions and instructions

How Can You Draw A  Cube on the Computer in logo?

```
New
10 screen 1:  key off:  cls
20 draw "D50; R50;U50;L50;E30;R50;NG30;D50;G30"
```

How Can You Draw More Than One Cube?
(Use B (move without plotting) and BM (plotting at a different location) to add more cubes)

## Worksession

- students to experiment using DRAW commands
- students to draw squares and cubes in logo
- students to draw receding cubes
- students to draw a cityscape or a still life of boxes (choice of teacher - both will teach receding three-dimensional shapes in space)
- students to add names on boxes or windows and doors on houses by using logo or box statements
- students to print drawings on dot matrix printer

## Summary

- review DRAW commands
- review how to make cubes recede in space

## Application

- students to draw in color

```
          add
20 Draw "C3;R50"               blue - C3
```

## Assignment

- draw a still life with receding shapes in craypas
- draw a cityscape (not in perspective) with receding cube and rectangular solid buildings in marker.  Use colors which will enhance the quality of recession in space.

## *TOPIC 110: Creating a Page With a Poem and an Illustration*

Performance Objectives - Students will be able to:

- use PFS Write or similar word-processing program to type poem with left justification, right justification or justification right and left
- draw an illustration or illustrations or an illustration and a border on the computer using the logo DRAW commands of the Tandy 1000 and IBM PC
- print illustration on a dot matrix printer
- make paste-up in art classroom
- xerox final project

Aim: How Can You Design a Page With a Poem and an Illustration Using Logo to Draw the Illustration on the Tandy 1000 and IBM PC?

Materials

17 IBM PC or Tandy 1000 computers with monochrome or color monitors
3 dot matrix printers
34 formatted disks for IBM PC or 34 DOS/file disks for Tandy 1000
(you must add CONFIG.SYS to Tandy 1000 DOS to make it IBM compatible for advanced graphics) see Tandy manual. PFS Write or similar word processing program

Motivation:

Exhibit poem illustrations including page designs with multiple illustrations and borders

Which designs lend themselves best to the use of the computer?
Why should we do this project on the computer?

Development

- What poem have you chosen? (Teacher or students to choose)
- What images can you illustrate?
- What kind of a border can you make?
- How can you print your illustration and border?
- How do you use a word processor? (At least one class lesson to be spent teaching class to use the word processing program you have chosen)
- How can you take all the above pieces and make a paste-up?

Teacher demonstration on board

- How can you draw objects in logo using DRAW statements? (Small increments of draw statements will produce a curved effect)

```
20 Draw "R1;F6;D1;L1;H6;U1
```

Worksession:

- students to experiment drawing curves in logo
- students to draw illustrations for poems

- students to draw borders
- students to print illustrations and borders
- students to type poem on word processor
- students to make layout/paste-up in art classroom
- students to xerox final copy for grading and class exhibit

### Summary

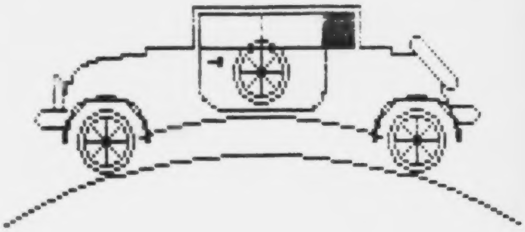
How can you draw objects with curves in logo?
What are the steps for this project?
(See above Worksession)

### Application

Students write poetry and illustrate their own poems
Students to add line and circle statements to programs

### Assignment

Students to print more copies of poem and illustrations.
Design two or more layouts using the same modules.



```
5 SCREEN 1 : KEY OFF : CLS
10 E$ = "L7;R14;L7;U7;D14;U7;H5;F10;H5;E5;G10"
20 PSET (100,80) : DRAW E$
30 PSET (200,80) : DRAW E$
40 CIRCLE (100,80),7 : CIRCLE (200,80),7
50 CIRCLE (100,80),9 : CIRCLE (200,80),9
55 PI = 3.14159
60 CIRCLE (100,80),13,,0,PI : CIRCLE (200,80),13,,0,PI
70 CIRCLE (100,80),14,,0,PI : CIRCLE (200,80),14,,0,PI
80 CIRCLE (150,250),173,,PI/2-.5,PI/2+.5
90 CIRCLE (150,200),132,,PI/2-.3,PI/2+.3
100 PSET (150,60) : DRAW E$
110 CIRCLE (150,60),7 : CIRCLE (150,60),9
120 LINE (130,43)-(180,53),3,B
130 LINE (128,53)-(128,41) : LINE -(182,41) : LINE -(182,53)
140 PSET (150,43) : DRAW "D10"
150 LINE (170,43)-(180,53),3,BF
160 PSET (128,53)
170 DRAW "L15;D2;L8;D1;L8;D1;L3;D1;L2;G3;D2;L2;D3;L1;D5;U7;U1;H2;L1;D10;R4;L8;
    G2;D1;F2;R8;D2
180 PSET (171,53)
190 DRAW "R10;D2;R8;F10;R2;E1;U2;H12;L2;G1;D2;F10;D3;F2;D2;R8;F2;D1;G2;L5
200 PSET (182,53)
210 DRAW "D13;L1;D2;G2;L1;D1;L31;H1;L1;H2;L1;U1;H1;U13
220 PSET (136,56) : DRAW "R1;D2;L1;U1;L3
230 GOTO 230
```

## *TOPIC 111: Drawing Block Letters*

Performance Objectives - Students will be able to:

- . enter low resolution graphics by using the Apple GR command
- . draw in color by using the COLOR command -- 15 colors
- . draw block letters by plotting lines
- . change background and foreground colors

Aim: How Can You Draw Block Letters in Low Resolution Graphics (GR) on the Apple IIE?

Materials

17 Apple IIE computers with monochrome or color monitors
34 initialized disks

Motivation

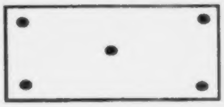
- . exhibit cut block letters of different colors -- place against different color backgrounds
- . discuss color effects when one color is placed against another

Development

Demonstration by teacher on board

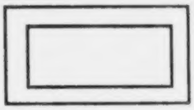
(you plot x,y -- HLIN makes a horizontal line, VLIN makes a vertical line)
USE ALL CAPS ON APPLE WHEN TYPING

```
10 GR
20 COLOR = 1
30 PLOT 20, 20
40 PLOT  1, 1
50 PLOT 39, 1
60 PLOT  1, 39
70 PLOT 39,39
```



(the screen is 40 x 40)

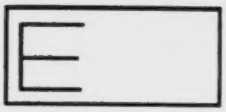
```
New
10 GR
20 COLOR = 1
30 HLIN  1, 39 at  1
40 HLIN  1, 39 at 39
50 VLIN  1, 39 at  1
60 VLIN  1, 39 at 39
```



How Can You Draw Block Letters?

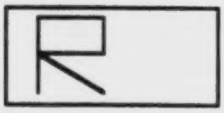
```
New
10 GR
20 COLOR = 1
30 VLIN 5, 15 at  5
```

```
    40 HLIN 5, 10 at  5
    50 HLIN 5,  8 at 10
    60 HLIN 5, 10 at 15
```



How Can You Draw Diagonals?

```
   New
   10 GR
   20 COLOR = 1
   30 VLIN  5,15 at 5
   40 VLIN  5,10 at 10
   50 HLIN  5,10 at 5
   60 HLIN  5,10 at 10
   70 PLOT  6,11
   80 PLOT  7,12
   90 PLOT  8,13
  100 PLOT  9,14
  110 PLOT 10,15
```



How can you fill the screen with color?

- Colors in Low Resolution
  - 0 black
  - 1 magenta
  - 2 dark blue
  - 3 purple
  - 4 dark green
  - 5 grey - 1
  - 6 medium blue
  - 7 light blue
  - 8 brown
  - 9 orange
  - 10 grey - 2
  - 11 pink
  - 12 green
  - 13 yellow
  - 14 aqua
  - 15 white

```
New
10 GR
20 COLOR = 3   'purple
30 FOR X = 1 to 39
40 VLIN 1, 39 at x
50 NEXT
```

How can you draw block letters over a colored screen?
(fill the screen -- then write a block letter program preceded by another color statement)

How can you change background and foreground colors on your block lettering program? (leave program intact --just change the color numbers)

## Worksession

- . students to experiment with
  - plotting points
  - drawing lines
  - drawing block statements
  - changing color statements
- . students to create a lettering design with letters that contrast with the background (name, initials, sign, etc.)
- . individual instruction

## Summary

- . review HLIN and VLIN commands
- . review color theory

## Application

- . students to draw a design using square and triangles
  let the foreground colors blend with the background (low contrast)

## Assignment

- . paint a sign using color contrast that you discovered on the computer

Note to teachers:

- . To print in low resolution graphics you must use a screen dump program

# *TOPIC 112: Drawing Cityscapes in Low Resolution Graphics on the Apple IIe*

Performance Objectives - Students will be able to:

- use plot statements to plot points and HLIN, VLIN statements to draw horizontal and vertical lines
- use for next loops to fill shapes
- draw cityscapes by placing shapes behind one another receding in space
- use color or shaded to create compositions with colors or shades receding in space

Aim: How Can You Draw a Cityscape Using low resolution graphics(GR) on the Apple IIE?

## Materials

17 Apple IIe computers with monochrome or color monitors
34 initialized disks

## Motivation

Teacher to draw a cityscape on the board -- use colored chalk and let the students color shapes to show the buildings receding in space

## Development

- hand out rexos of demonstration or similar program
- teacher to guide students through the program plotting approximate points on the rexo picture and filling in colors (see previous lesson for color chart)
- how can we fill the background, the sky and the ground? (see lines 20-90 of demonstration program)
- how can we fill the buildings? (you draw horizontal or vertical lines by using the for ...next loop) (See lines 100-130 of demonstration lesson)
- how can you draw windows? (see lines 450-480, lines 490 and 500)

Demonstration rexo on following page

## Worksession

- students to experiment filling in shapes using the for ... next loop (use demo rexo as guide)
- students to draw original cityscapes
- students to experiment with colors to make dark and cool colors recede, warm, bright and light advance
- take slides of work

Summary

- review rexo

Application

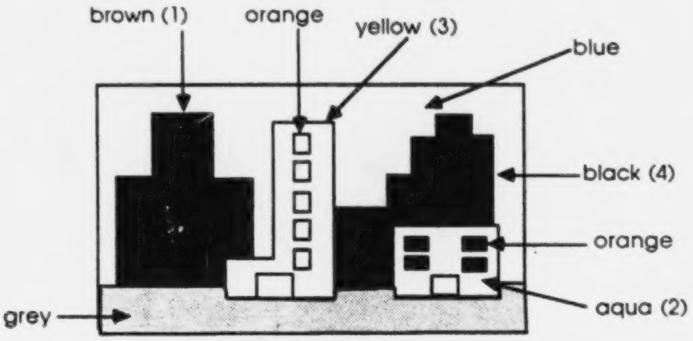
- students will draw a landscape in low resolution graphics

Assignment

- do a painting in tempera or acrylic based on your computer painting. Add more details such as fire escapes and signs.

```
LIST

10  GR                        sky
20  COLOR= 6
30  FOR X = 0 TO 30
40  HLIN 0,39 AT X
50  NEXT
60  COLOR= 10                 ground
70  FOR X = 31 TO 39
80  HLIN 0,39 AT X
90  NEXT
100  COLOR= 8                 bldg.1
110  FOR X = 5 TO 12
120  VLIN 13,31 AT X
130  NEXT
140  FOR X = 7 TO 10
145  HLIN 8,9 AT 9
150  VLIN 4,12 AT X
160  NEXT
170  COLOR= 14                bldg.2
180  FOR X = 29 TO 36
190  VLIN 20,36 AT X
200  NEXT
210  COLOR= 13                bldg.3
220  FOR X =11 TO 17
230  VLIN 25,36 AT X
240  NEXT
250  FOR X = 18 TO 24
260  VLIN 3,33 AT X
270  NEXT
280  FOR X = 21 TO 24
290  VLIN 34,36 AT X
300  NEXT
310  COLOR= 0                 bldg.4
320  FOR X = 25 TO 28
330  VLIN 23,31 AT X
340  NEXT
350  FOR X = 30 TO 35
```



```
360  VLIN 12,19 AT X
370  NEXT
380  VLIN 19,23 AT 28
390  PLOT 29,19
400  HLIN 31,34 AT 11
410  HLIN 32,33 AT 10
420  PLOT 7,15: PLOT 7,17                   windows bldg.1
430  PLOT 10,15: PLOT 10,17
440  VLIN 29,31 AT 8: VLIN 29,31 AT 9       door bldg.1
450  COLOR= 9
460  FOR X = 5 TO 27 STEP 2                 windows bldg.3
470  PLOT 21,X
480  NEXT
490  VLIN 33,35 AT 32: VLIN 33,35           door bldg.2
     AT 33
500  PLOT 32,27: PLOT 33,28: PLOT           windows bldg.2
    32,29: PLOT 33,30
```

# *TOPIC 113: Drawing Points, Lines and Geometric Shapes*

**Performance Objectives** - Students will be able to:

- . enter Hi-Res by using Apple HGR command
- . draw in color by using the HCOLOR command
- . plot points and draw lines
- . draw squares and triangles by plotting several points
- . create designs using squares and triangles
- . print designs on a dot matrix printer

**Aim**: How Can You Draw Points, Lines and Geometric Shapes in High Resolution (HGR) Graphics on the Apple IIE?

**Materials**

17 Apple IIe Computers with color or monochrome monitors
3 dot matrix compatible printers
34 initialized disks

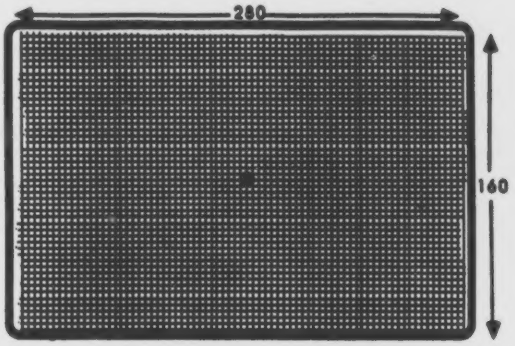
**Motivation**

Exhibit Mondrian and Albers paintings

**Development**

- . boot machines - students to work along

Teacher demonstration on board

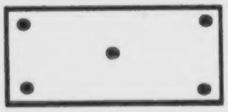


How can you plot points?
(The screen is 280 wide by 160 high. You can work up to 279, 159)

center of screen is at 139, 79 points are plotted x,y

- . plot these points?
  100,100
  250, 80, etc.

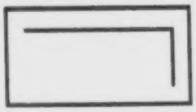
How do you write a program to plot points?



```
10 HGR
20 HCOLOR = 1
30 HPLOT 1,1
40 HPLOT 279,1                    (no home in graphics)
50 HPLOT 1,159               (white--check lesson on colors--
60 HPLOT 279,159           colors may vary according to monitor)
70 HPLOT 139,79
```

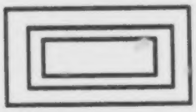
How do you write a program to draw lines?

```
New
10 HGR
20 HCOLOR = 1
30 HPLOT 1,1 TO 279, 1 TO 279, 159
```



How do you write a program to draw boxes?

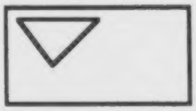
```
New
10 HGR
20 HCOLOR = 1
30 HPLOT 1,1 TO 279, 1 to 279, 159 to 1, 159 to 1,1
40 HPLOT 3,3 to 276, 3 to 276, 156 to 3, 156 to 3,3
```



Add another line to above program

How do you write a program to draw a triangle?

```
New
10 HGR
20 HCOLOR = 1
30 HPLOT 1,1 to 150, 1 to 75, 75 to 1,1
```



Add another triangle to the above program
Add an overlapping triangle

How can you print your designs on a dot matrix printer?

- run program - type PR#1 under picture. Check printer manual for graphics settings and interface for printing controls

Worksession

- students to experiment
  - plotting points
  - drawing lines
  - drawing boxes
  - drawing triangles
  - drawing overlapping triangles
- students to create designs using overlapping squares
- students to create designs using overlapping triangles
- students to print designs on dot matrix printer

Summary

- review plotting and how to draw lines
- review saving and loading programs
- review printing procedures
- class critique

## Application

- students to create designs using squares and triangles of varied sizes together

## Assignment

- color the print-out with markers. (Color project to be determined by teacher)
- do a painting based on the above geometric designs

## *TOPIC 114: Drawing Random Line Designs*

Performance Objective - Students will be able to:

- use the FOR...NEXT loop Basic programming command
- fill the screen, make parallel line designs and grids
- make random line and line segment designs
- use designs as backgrounds for advertising projects

Aim: How Can You Draw Grids and Random Line Designs Using the FOR... NEXT loop on the Apple IIe computer in high resolution graphics (HGR)?

### Materials

17 Apple IIe computers with monochrome or color monitors
34 initialized disks

### Motivation

Exhibit Mondrian drawings and Rice Pereira paintings

- discuss the use of line segments and planes as drawing tools

### Development

Demonstrations by teacher on board

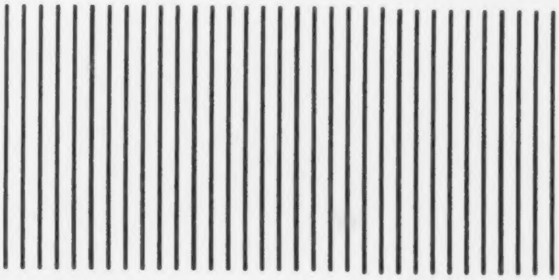
How can you fill a screen in high resolution graphics?

```
10 HGR
20 HCOLOR = 1
30 FOR X = 1 to 279
40 HPLOT x, 1 TO x, 159
50 NEXT
```

How can you draw parallel vertical lines? (by using a FOR...NEXT loop you can make the x or y coordinate a changing variable)

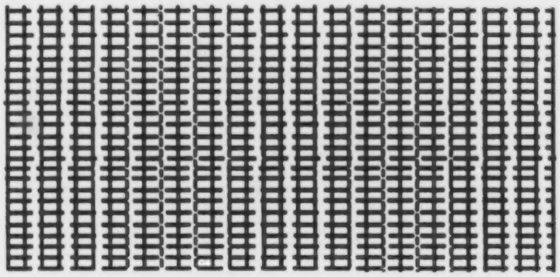
```
10  HGR : HCOLOR= 1                          trace the program
20  FOR X = 1 TO 279 STEP 5             20 counts from 1 to 279 by 5's
30  HPLOT X,1 TO X,159                  30 will Hplot from x,1 to x,159

]
```



How can you make parallel horizontal lines to form a grid?

```
10  HGR : HCOLOR= 1
20  FOR X = 1 TO 279 STEP 5
30  HPLOT X,1 TO X,159
40  NEXT
50  FOR Y = 1 TO 159 STEP 4
60  HPLOT 1,Y TO 279,Y
70  NEXT
```



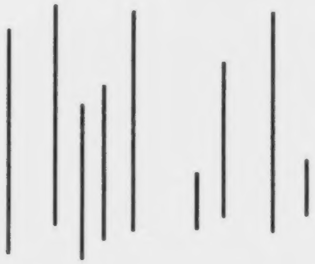
How can you make random vertical lines?

```
10  HGR : HCOLOR= 1
20  FOR X = 1 TO 279 STEP 5
30  HPLOT X, INT ( RND (1) * 159)
     + 1 TO X, INT ( RND (1) * 159) + 1
40  NEXT

]

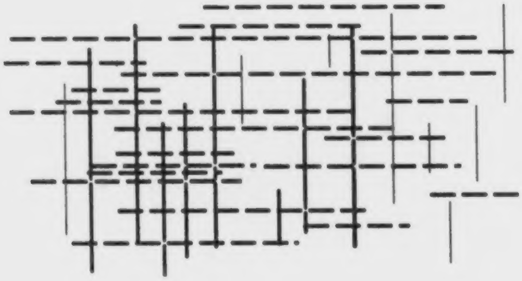
]
```

30 plots x, a random number to x, a random number



How can you make random horizontal and vertical line segments?

```
10  HGR : HCOLOR= 1
20  FOR X = 1 TO 279 STEP 5
30  HPLOT X, INT ( RND (1) * 159)           lines 20-40 - vertical lines
     + 1 TO X, INT ( RND (1) * 159) + 1
40  NEXT
50  FOR Y = 1 TO 159 STEP 4                 lines 50-70 - horizontal lines
60  HPLOT  INT ( RND (1) * 279) +
    1,Y TO  INT ( RND (1) * 279)
     + 1,Y
70  NEXT
```



(add line 45
45 color = 7 to change color of horizontal random lines)

**Worksession**

- students to experiment filling the screen in varied colors
- students to draw parallel and horizontal grids using different steps to achieve different effects
- students to draw random line segment designs
- students to print designs on a dot matrix printer

**Summary**

- what does the FOR...NEXT loop allow us to do in the above programs? (repeat lines)
- what could be some of the uses of the designs in advertising?

**Application**

- students to add planned design elements (geometric) on top of random designs

**Assignment**

- use collage and/or montage elements over computer print-out to create record album covers or ads

```
]LIST

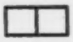
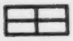
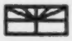
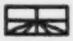
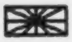
10  HGR
20  HCOLOR= 1
30  HPLOT 139,1 TO 139,159

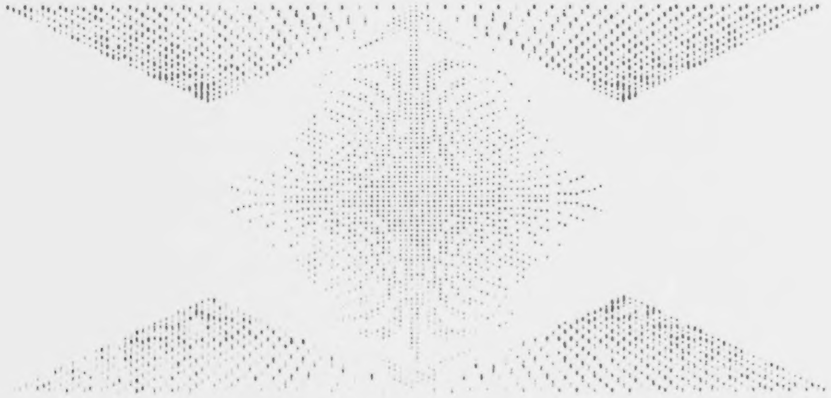
40  HPLOT 1,80 TO 279,80

50  FOR X = 1 TO 279 STEP 6
60  HPLOT 139,80 TO X,1
70  NEXT
80  FOR X = 279 TO 1 STEP 6
90  HPLOT 139,80 TO X,159
100  NEXT
110  FOR X = 1 TO 159
120  HPLOT 1,80 TO 139,X
130  HPLOT 279,80 TO 139,X
140  NEXT
145  HCOLOR= 0
150  FOR X = 1 TO 159 STEP 2
160  HPLOT 1,80 TO 139,X
170  HPLOT 279,80 TO 139,X
180  NEXT

]
```

<u>trace the program</u>

10 enter Hi-Res graqphics
20 a visible color
30 
40 
50 will count from 1 to 279 by 6's
60  fans from left to right
80 will count from 279 to 1 by 6's
90  fans from right to left
110 counts from 1 to 159
120  draws diamond
130 over fan grid
145 0 = black
150 counts from 1 to 159 by 2's
160 & 170 draw diamond in same place but counts by 2's instead of 1's erases parts of designs



(Thousands of variations are possible by plotting different points and erasing different areas of the designs.)

## TOPIC 115: How You Can Make Decorative Designs Using FOR...NEXT Loop in HRG

- use the FOR...NEXT loop to create original designs
- trace programs written in Basic for the Apple IIE
- use decorative designs as backgrounds for record album covers

Aim: How Can You Make Decorative Designs Using the FOR...NEXT Loop in High Resolution Graphics on the Apple IIE.

Materials:

- 17 Apple IIe computers with color or monochrome monitors
- 3 dot matrix compatible printers
- 34 initialized disks

Motivation:

- exhibit any cartoon explosion on film or in a comic
- discuss ease of getting decorative effects on the computer

Development:

- demonstrations by the teacher on the board or hand out rexo sheets

Worksession:

- students to trace demonstration lessons with teacher
- students to experiment making decorative designs (original) by plotting different points and erasing different areas of the designs
- students to create designs to use as background for record album cover
- students to print designs on a dot matrix printer

Summary:

- review for...next loop as a method of creating decorative designs in high resolution graphics

Application:

- students to experiment with variations in color (see Apple manual for color options)
- students to take slides of color screens
- students to make color xeroxes of slides

Assignment:

- use the computer print-out as the background for a record album cover. Cut out lettering from colored paper and paste on top of computer print-out.

```
] LIST

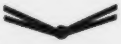
10  HGR : HCOLOR= 1
20  FOR X = 1 TO 159 STEP 4
30  HPLOT 1,X TO 139,79 TO 279, X
40  NEXT

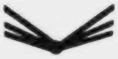
]
```

__trace__ __the__ __program__

10 enter Hi-Res graphics
20 will count from 1 to 159 by 4's
30 Hplot from 1,x to center of screen
to 279,x

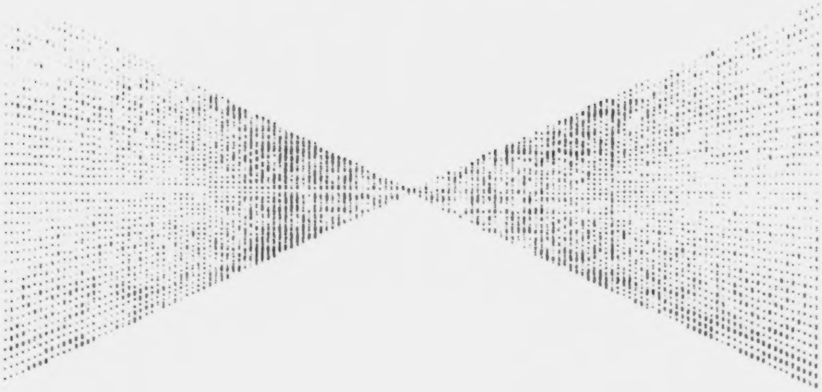
when x = 1

when x = 5 

when x = 9 

,etc.

(x not necessary after next)
(140 as center will work on some monitors)



```
]LIST

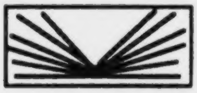
10  HGR : HCOLOR= 1
20  FOR X = 1 TO 159 STEP 4
30  HPLOT 1,X TO 139,159 TO 279,X

40  HPLOT 1,1 TO 139,X TO 279,1
50  NEXT

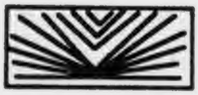
]
```

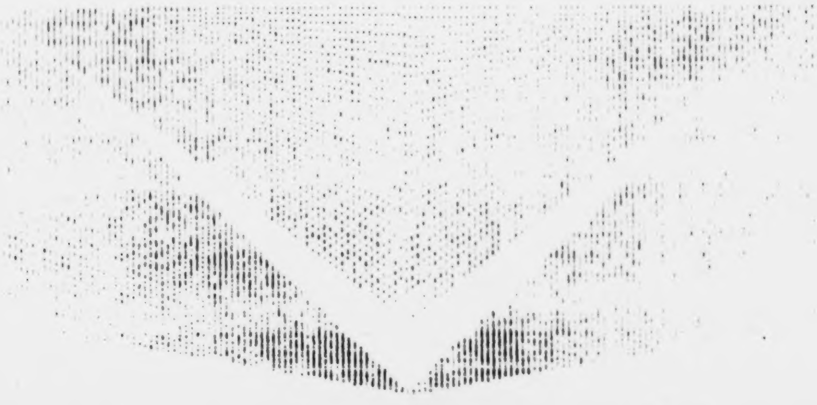
__trace__ __the__ __program__

10 enter Hi-Res graphics
20 will count from 1 to 130 by 4's
30 Hplot will plot from 1,x to 139,159
(lowest center point on screen) to 279,x
40 Hplot 1,1 to
139,x



to 279,x





one end of the line or surface is near the observer, while the other end is farther away." Students are then asked which of the six surfaces of room are receding, and which are facing them, or "parallel" to them. Summation: "All horizontal edges of receding surfaces appear to converge to one point on eye level." This point is called the "Vanishing Point".

3. The teacher then holds a cube with one surface flat against the board. Students are asked to compare the size of the front vertical surface facing them with the bottom, receding surface. They respond that the bottom surface looks smaller or thinner than the front surface. They conclude that this must be an illusion since the cube's six surfaces are all squares and equal in size.

   The term "foreshorten" is now introduced as: "the illusion of receding surfaces appearing narrower or thinner."

   By lowering the cube gradually, the teacher demonstrates that the bottom receding surface continues to narrow as it approaches eye level. When it is on eye level, it appears a horizontal line. (Students may repeat this exercise at their own desks with a book)

Worksession

1. Select a vanishing point on or near the center of the paper. Draw the horizon line through this point.

2. Draw four rectangles which vary in size, with their edges parallel to the top, bottom, and sides of the paper. One of the boxes is above eye level, one below, one on eye level, and another through the eye level or horizon line.

3. From the corners of the boxes draw light lines to the vanishing point, (but only those which do not cut through the boxes.)

4. Complete the drawing by adding the necessary vertical and/or horizontal lines of the receding surfaces.

5. With a felt-tip pen, trace the picture onto the plastic or Saran, using only those lines which represent the real edges of the objects, and not the guide lines.

6. Press the Saran or tape the plastic to the screen of the monitor and turn it on.

7. The machines should have been loaded with the "Delta Draw" program in advance. This is done by inserting the diskette into the computer, turning it on, and when the screen fills with letters hit any key, and the arrow will appear. Once this is done, students can begin to trace the lines of their pictures onto the screen.

8. Students begin with the following keyboard commands:

   D - draws line in direction of arrow, a 10 unit move
   M - moves arrow without drawing a line, a 10 unit move
   L - turns arrow to the left at 30 degrees
   R - turns arrow to the right at 30 degrees

## *TOPIC 116: Designing a Repeat Pattern Using Lettering*

Performance Objectives: Students will be able to:

- use go to statements on the computer and thereby increase computer literacy
- design a page using lettering as the major design element
- print a design on a dot matrix or daisy wheel printer

Aim: How can you design a repeat pattern using lettering?

Materials:

- 17 IBM PC
- Tandy 1000 or Apple IIe computers with color or monochrome monitors
- 3 dot matrix or daisy wheel printers'
- 34 initialized disks for Apple IIe
- 34 formatted disks for IBM PC or
- 34 DOS/File disks for Tandy 1000

Motivation:

Exhibit overall designs using lettering as a major element found in advertising, i.e., magazines or wrapping paper.

Development:

1. Boot up machine

2. Demonstration on board - students to work along.

```
a) 10 screen 0; key off; cls         (Line 10 type home to clear screen
b) 20 width 80   (Apple PR#3)         on Apple 2E)
c) 30 print " name **** name **** name **** name **** name"
d) 40 goto 30
e) F2 or RUN
```

3. What happens when you hit F2 or type RUN?

4. How can you stop the scrolling?
   a) on Apple hit CTRL-C; on Tandy 1000 and IBM PC hit CTRL-BREAK)

5. How can you see your program again?
   a) Hit F1 or type LIST)

6. How can you do your program in color?
   a) only for IBM and Tandy in text mode - see manual for color charts add line 15 i.e., 15 color 4 to change to read on IBM PC and Tandy 1000

7. How can you save your program?
   a) type save "name" or hit F4 save name for Tandy and IBM
   b) type SAVE NAME on Apple (no quotes necessary)

8. How can you load your program?
   a) type load "name" or hit F3 load for Tandy and IBM

b) type LOAD NAME on Apple

9. How can you print your program?

Note to teacher:

Check printer manuals for proper settings for text mode.

Worksession:

1. Students to write programs to design overall lettering pages utilizing character keys as well as letters.
2. Students to print design.
3. Individual instruction.

Summary:

1. How can we make a line repeat indefinitely on a computer?
2. How can we stop the scrolling?
3. How do we use the printer to print our designs?

Application:

Make a name plate by drawing your name in markers over the computer printout.

Assignment:

1. Design an overall lettering pattern to be done on the computer suitable for wrapping paper in your sketchbooks.
2. Make a design that consists of two repeatable row designs following and relating to one another.

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## *TOPIC 117: Expanded and Condensed Lettering*

Performance Objectives: Students will be able to:

- draw expanded and condensed letters on the computer
- write a simple Basic program using print statements
- save programs
- print programs on daisy wheel or dot matrix printer

Aim: How can you draw your initials on the computer using expanded and condensed lettering?

Materials:

17 IBM PC
Tandy 1000 or
Apple IIE Computers with color or monochrome monitors
3 dot matrix or daisy wheel printers
34 initialized disks for Apple IIe
34 formatted disks for IBM PC or
34 DOS/file disks for Tandy 1000

Motivation:

1. Review booting the system as the students work along
2. Exhibit expanded and condensed lettering samples -- previous work or samples from magazines

Development:

- Demonstration by the teacher on board
  - How can we draw letters of different proportions?

```
10 screen 0:  key off:  cls                           (Apple 10 home)
20 print " EEEEEEE           EEEE                     EEEEEEEEEEE "
30 print " E                 E                        E  "
40 print " E                 E                        E  "
50 print " EEEEEEE           EEEE                     EEEEEEEEEEEE"
60 print " E                 E                        E  "
70 print " E                 E                        E  "
80 print " EEEEEEE           EEEE                     EEEEEEEEEEEEE"
90 goto 90
```

- demonstration by teacher on board
  - How can we draw monograms using condensed or expanded lettering?
  - How can we save our work?
  - How can we retrieve (load) work?

Tandy and IBM - Type LOAD "NAME" or hit F3 function key. Hit F2 or RUN to run the program; F1 or LIST to list the program. You can now continue working on it or print. If you forgot the name of your program, type files and you will see all of the programs listed. The last name should be the program that you saved.

Apple - Type LOAD NAME or RUN NAME to load and run your program. To see your program type LIST. If you forgot the name of your program type CATALOG

- How can you print a program?

Tandy and IBM - Put your disk into a computer which is attached to a printer. Make sure that your computer is on and in basic. Load and run program. On the Tandy hit Print/Shift; on the IBM Pr/Sc. The printer should begin printing.

Apple - Put the disk into the computer which is attached to a printer. Make sure that the computer and printer are on. Type LOAD NAME of program. When the red light goes off type PR#1. Type RUN; printer should begin. When printing is finished, type PR#0 to turn the printer off.

Note to teacher:

Check printer manual for proper settings.

Worksession:

- Students to load previous day's work- drawing block letters. Students to continue working on this project or to print these letters.

- Students to write programs for expanded and condensed lettering

- Students to design monograms in condensed or expanded lettering

- Students to print monograms

Summary:

- Review expanded and condensed lettering
- Review saving and loading
- Review printing techniques

Application:

Write your name in expanded or condensed lettering. Make a sign in expanded or condensed lettering.

Note to Teacher:

To make the screen 80 columns wide for application programs:

Tandy 1000 and IBM PC - add line 15 width 80

Apple IIe - add line 15 PR#3 (when printing the 80 column card will be disabled but it will print 80 columns).

## *TOPIC 118: Designing a Repeat Pattern for Fabric or Wallpaper*

Performance Objectives: Students will be able to:

- use goto statements and for... next loops to create repetition on the computer
- design repeat and drop repeat patterns for use on fabric or wallpaper
- print designs on dot matrix or daisy wheel printers

Aim: How can you design a repeat pattern for fabric or wallpaper?

Materials:

17 IBM PC, Tandy 1000 or Apple IIe computers with color or monochrome monitors
3 dot matrix or daisy wheel printers
34 initialized diskd for Apple IIE
34 formatted disks for IBM PC
34 DOS/file disks for Tandy 1000

Motivation:

Exhibit repeat patterns and drop repeat patterns on fabric and wallpaper.

Why is it easy to design repeat patterns on a computer? (The computer allows us to experiment with many different kinds of repetition. You can create many designs in a short period of time.)

Development:

- Boot up machine

- demonstration on board- students to work along

```
10 screen 0:  key off:  cls        (Apple 10 home)
20 width 80 (Apple PR#3)
30 for x = 1 to 23
40 print "****----****----****----****----****----****----"
50 next x
F2 or RUN
```

- How many times does this line repeat itself? (23 times)

- What do you think for x = 1 to 23... next x means?

- Demo #2 on board

```
New
10 screen 0:  key off:  cls
20 width 80
30 for x = 1 to 12
40 print "****----****----****----****----****----****----"
50 print "----****----****----****----****----****----****"
60 next x
F2 or RUN
```

- How many times was the design repeated this time?

- What is the difference between design #1 and design #2? (each line is a drop repeated 12 times, #2 is a drop repeat pattern)

. Demo #3

```
NEW
10 screen 0:  key off:  cls
20 width 80
30 print" ---       ---       ---"
40 print" (0 0)    (0 0)     (0 0)"
50 print    U        U         U "
60 print"      ---       ---       ---
70 print"     (0 0)     (0 0)     (0 0)"
80 print"       o         o         o"
90 goto 30
F2 or RUN
```

Hit CTR1-Break on Tandy and IBM, Ctrl-C if you are using an Apple (you can erase break and cursor with edit keys and space bar before printing) on Tandy and IBM

- What is different about design #3

- How can we print our designs? (Review)

Worksession:

- Students to experiment with goto statements and for... next loops to create 2 and 3 line graphic programs - repeat and drop repeat patterns

- Students to print designs on dot matrix or daisy wheel printers.

- Individual instruction

Summary:

- What are 2 methods of creating repetition on the computer? what is the difference between them?

- What 2 different kinds of repeat patterns did we do?

Application:

- Students to do repeat patterns in color. See lesson #4 and Tandy and IBM manuals (no color in text mode for Apple)

- Students to turn pages sideways and overlap printing to create plaids

- Students to overlap 2 different designs for more complicated plaid

Assignment:

- Students to use computer designs as motivation for fabric design to be done in paint or marker

```
OK
load"bifocal"
OK

     ~         \0-0/       ===         ~        \0-0/
                 ~                                ~
    ===                   \0-0/       ===
                             ~
   \0-0/        ===                  \0-0/       ===

     ~         \0-0/       ===         ~        \0-0/
                 ~                                ~
    ===                   \0-0/       ===
                             ~
   \0-0/        ===                  \0-0/       ===

     ~         \0-0/       ===         ~        \0-0/
                 ~                                ~
    ===                   \0-0/       ===
                             ~
   \0-0/        ===                  \0-0/       ===

     ~         \0-0/       ===         ~        \0-0/
                 ~                                ~
    ===                   \0-0/       ===
                             ~
   \0-0/        ===                  \0-0/       ===

     ~         \0-0/       ===         ~        \0-0/
                 ~                                ~
    ===                   \0-0/       ===
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     ~         \0-0/       ===         ~        \0-0/
                 ~                                ~
    ===                   \0-0/       ===
                             ~
   \0-0/        ===                  \0-0/       ===

    ===          ~        \0-0/       ===          ~
   \0-0/        ===
Break in 30
Ok
```

```
     * -------- * -------- * -------- * -------- * -------- *
   * + * ---- * + * ---- * + * ---- * + * ---- * + * ---- * + *
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  * +++ * -- * +++ * -- * +++ * -- * +++ * -- * +++ * -- * +++ *
   * + * ---- * + * ---- * + * ---- * + * ---- * + * ---- * + *
     * -------- * -------- * -------- * -------- * -------- *
OK
```

## *TOPIC 119: Creating Simple Shapes on the Computer*

Performance Objectives: Students will be able to:

- create simple shapes in text mode using print statements
- boot the machine and turn it off
- run and list programs
- edit programs

Aim: How can you create simple shapes on the computer?

Materials:

17 IBM PC
Tandy 1000 or
Apple IIe computers with color or monochrome monitors
3 dot matrix or daisy wheel printers
34 initialized disks for Apple IIE
34 formatted disks for IBM PC or
34 DOS/file disks for Tandy 1000

Motivation:

Distribute disks. Show class parts of the computer - the monitor, central processing unit, disk drive etc. Explain how the computer works (this should already have been done with diagrams in the classroom).

Development

- How do we boot the system? Students to work along.

| | |
|---|---|
| Apple IIe-- | Insert initialized disk in Drive A; close latch; turn on the monitor; turn on the computer; you are ready to begin writing when you see the cursor |
| IBM PC | Insert formatted disk in Drive A; close latch; turn on monitor; turn on computer; wait for instructions; when asked for date hit carriage return; when asked for time hit carriage return; type basic when the A> comes up; wait for the screen to clear and for the cursor to appear; you are ready to begin writing (A> = A prompt) |
| Tandy 1000 | Insert DOS/File disk in Drive A; follow identical directions as for IBM PC |

Note to teachers:

- For the IBM and Tandy it is also possible to turn the monitor and the computer on first; then insert the disk; boot the IBM by hitting ctrl-alt-del; boot the Tandy by hitting the red reset button

- for single drives just insert the disk in the drive; continue as above described

Students to work along.

```
10 screen 0:  key off:  cls
20 print "*************"      (Apple 10 home)
30 print "*************"
40 print "***"
50 print "***"
60 print "***"
70 print "*************"
80 print "*************"
```

Hit the F2 function key or type RUN
Hit the F1 function key or type LIST

Notes to teacher:

- make sure you hit the carriage return after each line
- screen 0 means you are in text mode on IBM and Tandy screens
- key off removes the listings at the bottom of the screen
- cls clears the screen on Tandy and IBM
- line 10 should be home on Apple. To clear the screen on Tandy and IBM make sure that the left hand quotation marks are lined up
- you must type NEW before you begin a new program
- you may use ? for PRINT, however in graphics it may create a problem with line lengths

```
NEW
10 screen 0:  key off:  cls   (Apple 10 home)
20 print "      o"
30 print "      o"
40 print "      o"
50 print " ooooooooo"
60 print "      o"
70 print "      o"
80 print "      o"
```

Hit F2 or type RUN to see what you've drawn
Hit F1 or type LIST to see your program again

add line 90 to your program

```
90 print " ooooooooo"   What happened when you hit F2 or run?
```

Notes to teacher:

- to eliminate a line completely, type the line number by itself on a separate line under the program and hit the carriage return
- the easiest way to edit, perfect for the beginner, is to retype the line completely under the program. When you hit F1 or type LIST the faulty line will be replaced with the new corrected line
- it is easier to tell the class to make a correction when they ask rather than anticipating errors in the first lesson

Worksession:

- Students to write simple programs using print statements to draw their own shapes on the computer. They may use any of the letter keys and character keys including the additional characters on the numeric pads of the IBM PC and the Tandy 1000
- Individualize instruction, especially for those students who have never used typewriters. Emphasize getting the work done and finding the keys versus proper fingering.

Summary:

- Review print statements
- Review RUN and LIST
- Clean up - students should work along
    - open latch on disk drive
    - take out disk
    - turn off monitor
    - turn off computer

Application:

- Design a composition using the same simple shape that you've designed four times in different sizes

Assignment:

- Design five shapes in your sketchbooks that you could draw on the computer using simple print statements

## *TOPIC 120: Drawing Block Letters on the Computer*

Performance Objectives: Students will be able to:

- write simple basic programs
- draw block letters using print statements in text mode
- edit programs using edit keys
- save programs

Aim: How can you draw block letters on the computer?

Materials:

17 IBM PC
Tandy 1000 or
Apple IIE computers with color or monochrome monitors
3 dot matrix or daisy wheel printers
34 initialized disks for Apple
34 formatted disks for IBM PC
34 DOS/File disks for Tandy 1000

Motivation:

1. Review booting the system, students to work along

2. Exhibit students' block lettering projects on graph paper previously done in the classroom

Development:

- Demonstration by teacher on the board - How can we draw block letters using the character keys?

```
10 screen 0:  key off:  cls       (Apple 10 home)
20 print "    00000000000     PPPPPPPPPP"
30 print "    00       00     PP      PP"
40 print "    00       00     PP      PP"
50 print "    00       00     PP      PP"
60 print "    00       00     PPPPPPPPPP"
70 print "    00       00     PP"
80 print "    00       00     PP"
90 print "    00       00     PP"
100print "    00000000000     PP"
110 goto 110
F2 or RUN
```

Notes to teacher:

- Line 110 goto 110 produces an endless loop. Instead of writing end as the last line of a program which is the usual, the 110 goto 110 statement hides the cursor so that it will not appear when printing. Always add this statement to a graphics program in text or medium or high resolution graphics using the next number after the last line number of your program.

- For this first project letters should be no more than 23 lines high by 40 spaces wide.

- How can you make corrections in a program?

- The easiest way to edit is to re-do a complete line; hit F1 or type list and the new line will replace the old one.

- To totally remove a line - type the line number after the last line of your program; hit the carriage return and the line will be removed.

- You can use the edit keys.

Tandy 1000 and IBM PC - Move the edit keys to the position that you want to correct. Erase with the space bar (be careful with the backspace - the whole line will move.) Make the correction, change or addition; hit the carriage return as many times as necessary until the cursor returns to the end of the program; continue writing.

Apple IIe - Hit Escape (ESC) key. This enables you to move to any place on the screen. Use the arrow keys to move to the line number where the correction is to be made. Hit ESC again. Use an arrow key to move to where the correction is to be made; strike over or erase with space bar; use arrow key to the end of the line; hit carriage return as many times as necessary until the cursor returns to the end of the program. Continue writing.

- How can you save a program?

- When you are finished with a program and are ready to save it to work on at a later date, for reference or for printing, you type:

| | |
|---|---|
| Tandy 1000 and IBM PC | -SAVE"name" or hit the F4 function key; hit carriage return; wait for the red light to go off |
| Apple IIe | -SAVE NAME (you do not need quotes) hit the carriage return; wait for the red light to go off |

Notes to teacher:

- The name should be no more than 7 characters, no less than 2; do not use numbers alone
- in order to check whether your work has been saved: on Tandy and IBM type FILES on Apple type CATALOG

Worksession:

- Students to draw block letters
- Individual instruction
- Teacher to help save good work

## Summary

- Review editing techniques
- Review saving
- Review cleanup procedures

## Application:

- Draw your initials on the computer. Draw a decorative border around your initials.
- Draw your name or nickname on the computer. Use other character keys.
- Make a simple sign on the computer.

## Assignment:

- Draw your initials in block letters. Color them with markers but do not use outlines.

```
EEEEEEEEEE     FFFFFFFFFF
EE             FF
EE             FF
EE             FF
EEEEE          FFFFF
EE             FF
EE             FF
EE             FF
EEEEEEEEE      FF
```

```
]LIST
5 PR# 1
10 PRINT "EEEEEEEEEE     FFFFFFFFF
   F"
20 PRINT "EE             FF"
30 PRINT "EE             FF"
40 PRINT "EE             FF"
50 PRINT "EEEEE          FFFFF"
60 PRINT "EE             FF"
70 PRINT "EE             FF"
80 PRINT "EE             FF"
90 PRINT "EEEEEEEEEE     FF"
```

## *TOPIC 121: Drawing Textured Silhouettes*

Performance Objectives: Students will be able to:

- cut silhouettes from black paper (of animals, butterflies, flowers, trees, faces, etc.)
- draw silhouettes on graph paper, simplifying into boxes
- transfer image from graph paper to the computer monitor by writing simple programs using text characters to create texture in the silhouettes

Aim: How can you draw a textured silhouette on the computer?

Materials:

- 17 IBM PC, Tandy 1000 or Apple IIE computers with color or monochrome monitors
- 3 dot matrix or daisy wheel printers
- 34 initialized disks for Apple IIE
- 34 formatted disks for IBM PC
- 34 DOS/File disks for Tandy 1000

Motivation:

Demonstration by teacher - how to cut a silhouette.
a) students to cut out silhouettes of objects in the art classroom (teacher to choose subject matter - students can work from photos, memory or reality)

Development:

1. Students to simplify silhouettes as they transfer them to graph paper. (no more than 23 lines vertically by 40 or 80 horizontally.)

2. Boot up machines

3. How many different symbols should you use for this project? (simplest and most direct with one symbol repeated but certainly more symbols can be used - at discretion of teacher based on the level of the class.)

Worksession:

1. Students to write simple print statements to draw silhouettes (working from their graph paper drawings.)

2. Individual instruction.

Summary:

1. What is a silhouette?

2. Why do we have to simplify the objects to put them on the computer?

3. How does the computer help us to enhance our silhouettes?

4. What are the uses in advertising of textured silhouettes?

Application:

1. Using the same graph paper drawing - use computer characters to fill in the negative space (the background).

2. Leave the object white.

Assignment:

1. Do a drawing in color of a silhouetted shape using a texture that you make up.

2. Do not outline the object - let the texture fill the shape.

Note to teachers:

a) how to draw on more than 23 lines
b) it is easy to draw on as many lines as you want
c) a program can be thousands of lines long
d) however, depending on your interface card there might be a problem printing
e) on the Tandy 1000 with a Tandy dot matrix or daisy wheel printer it is necessary to use LPRINT statements
f) with an Apple IIe and an Espon printer, the printer continues to print the screen scrolls
g) you will have to check the computer and printer manuals to determine how to print on more than 23 lines

## *TOPIC 122: Drawing a Cityscape*

Performance Objectives: Students will be able to:

- use print statements to write a simple Basic program
- draw a scene using all the existing keys on the keyboard (including the numeric pads of the IBM PC and the Tandy 1000)
- edit computer programs/drawings
- print drawings on a dot matrix or daisy wheel printer

Aim:How can you draw a cityscape on a computer?

Materials:

17 IBM PC
Tandy 1000 or
Apple IIe computers with color or monochrome monitors
34 initialized disks for Apple IIe
34 formatted disks for IBM PC or
34 DOS/file disks for Tandy 1000

Motivation:

Exhibit line drawings of cityscapes with varied graphic shading techniques such as cross hatching - emphasize frontal drawings with architectural details.

What computer letters or symbols can be used to draw a picture such as this on the computer - what symbols can be used for windows, doors, etc.?

Development:

1. What are some other ways we could draw windows and doors on the computer? (Students to demonstrate on the board)
2. What letters would be best for drawing building outlines?
3. what letters can we use to make pointed roofs?
4. What characters can we use for clouds, snow, etc.?
5. How can we edit our programs/drawings if we make a mistake?
6. How can we save our drawings? (Day 1 save as City 1; Day 2 resave with new work added as City 2 - enables students to keep work at all stages of development)
7. Students to print cityscapes
8. Students to edit work and reprint final cityscapes for grading and exhibition
9. Boot machine

Worksession:

- Students to experiment drawing buildings - Day 1
- Students to organize buildings together into a cityscape - Day 2
- Students to add background - horizon, clouds, snow, etc.
- Students to print cityscapes on dot matrix or daisy wheel printer
- Individual instruction

Summary:

- Review editing techniques
- Review advanced saving procedures
- Review printing procedures
- Hang class exhibit

Application:

1. Students to draw more complicated cityscapes including tiered skyscrapers. Students to do similar drawings in color on the IBM or Tandy

2. Take slides of color work - make color xeroxes from the slides

Assignment:

Draw a cityscape in pencil or marker using your computer cityscape as motivation. Attention should be given to architectural details - floors, windows, signs, fire escapes, etc. This project can be done from memory or from reality.

```
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   10000000001    1@@@@@@1   1========1  1========1  1  1+++++++++1  1
   10000000001____1@@@@@@1___1========1  1========1__1  1+++++++++1  1
   10000001@@@@@@@@@@@1++++++++1 \====1  1====11111111 \1+++++++++1  1
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::::1 1=====1  1=====1  \++++++1 1@@@@@1       1\111111======1  100001
::::1 1=====1  1=====1   \+++++1 1@@@@@1   ____1_\11111======1  100001
::::1 1=====1  1=====1   1+++++1 1@@@@@1   1++++++1 \11======1  100001
```

Figure #1

# *TOPIC 123: Landscape Drawing on the Computer*

Performance Objectives: Students will be able to:

- use print statements to write a simple basic program
- draw a landscape using all the existing keys on the keyboard (including the numeric keyboard of the IBM and Tandy)
- use outlines and shapes when drawing
- erase and edit out certain sections of drawings for the effect of clouds, etc.
- print drawings on dot matrix or daisy wheel printers

Aim: How can you draw a landscape on a computer?

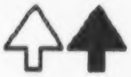
Materials:

- 17 IBM PC Tandy 1000 or Apple IIe computers with color or monochrome monitors
- 3 dot matrix or daisy wheel printers
- 34 initialized disks for Apple IIe
- 34 formatted disks for IBM PC
- 34 DOS/File for Tandy 1000

Motivation:

1. Exhibit Van Gogh's line drawing landscapes.
   a) what computer characters would Van Gogh have use if he had wanted to do a similar drawing on the computer?

2. Demonstration board by teacher.
   a) how to draw using outline versus how to draw using shape
   b) how to draw a tree



```
    *
   ***
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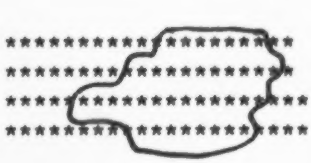
```

3. How to draw clouds?



```
*********************
*********************
**********************
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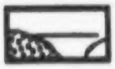
```

Note to teachers:

a) erase sections outlined above by using edit keys and space bar
b) make sure to hit carriage return after editing each line (Apple - be sure to use ESC key as well)

4. How to design a landscape? (how to break up paper with horizon, then add houses, trees, etc.)

5. How to fill a whole area of land with characters.



6. How can we save our drawings (review)?
7. How can we print our drawings (review)?
8. Boot machine

Worksession:

1. Students to draw houses - Day 1.
2. Students to draw trees - Day 2.
3. Students to design a landscape using symbols to fill large areas of land and sky.
4. Students to print landscapes.
5. Students to edit program/drawings and reprint final landscapes for grading and class exhibit.
6. Individual instruction.

Summary:

1. How can you fill a whole area of land or sky?
2. How can you erase areas away?
3. What editing procedures must you use in order to do this? Why?

Application:

1. Design a forest.
2. Design a landscape in color (IBM or Tandy).

Assignment:

1. Do an Impressionist landscape painting in tempera paint.
2. Look at your computer drawings and at Impressionist landscapes for motivation. File disks for Tandy 1000

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     *******      I         I___I         I XXXXXXXXXXX_I**********
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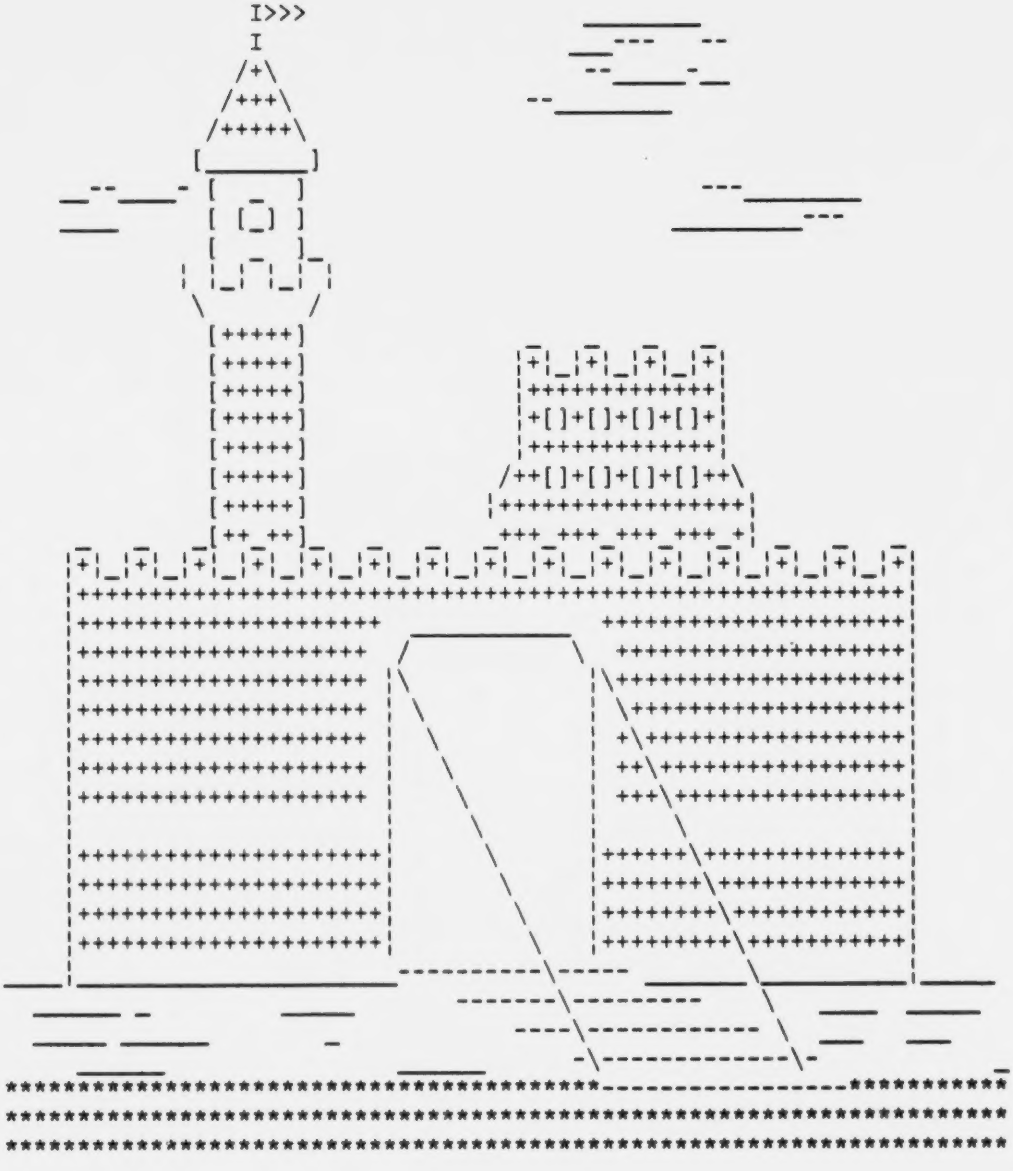
```



## TOPIC 124: Assignment Sheets - Basic Programming

1. Disk Management
2. Using Print statements with GOTO
3. Using If/Then
4. Using If/Then and Print
5. Using If/Then, Print and GOTO
6. Comparing three Counter Programs
7. Using INPUT, READ and DATA
8. Using the Random Generator
9. Comparison of INT and ABS Functions
10. Drawing a rectangle with INPUT statements
11. Rounding with INT Function

**LAST NAME: FIRST NAME:**

1. Why can't you use a new disk right out of the box?

2. Name two ways a disk may be formatted.

   a.

   b.

3. Describe the proper care in handling disks.

4. What types of data may be stored on a disk?

5. How many tracks are there on a disk after it is formatted?

6. What is the relationship between tracks and sectors?

7. How many sectors (blocks) are free to receive data on a freshly formatted disk?

8. Where is the write protect notch and when do you cover it?

9. Where is the Directory located on a disk?

10. Describe the process of loading the Directory into a computer and listing out the files.

Study the program below and write in the space below the message that would be printed if the program were run.

```
10 PRINT  "WELCOME TO SCHOOL"
20 GOTO 60
25 PRINT
30 PRINT  "HELLO SUPERSTAR"
35 END
40 PRINT "COMPUTERS ARE MY THING"
50 GOTO 100
60 IF A=5 THEN 140
70 PRINT "COMPUTER WORKSHOP"
80 GOTO 40
90 REM A TRICKY PROGRAM
100 A=5
110 GOTO 60
120 PRINT "AND I'M A SUPERSTAR!"
130 GOTO 25
140 PRINT "COMMODORE 64 MICROCOMPUTER"
150 PRINT "I CAN DO IT TOO"
160 PRINT "I SPEAK BASIC"
170 GOTO 120
```

Computer Graphics

NAME: CLASS:

GIVEN: A = 10, B = 20, C = 30

The next line number is 20.

|  | Statement | Condition is (T of F) | Branch to |
|---|---|---|---|
| 1. | 10 IF A=B THEN 40 |  |  |
| 2. | 10 IF A<> THEN 50 |  |  |
| 3. | 10 IF A>B THEN 60 |  |  |
| 4. | 10 IF A<B THEN 70 |  |  |
| 5. | 10 IF C <= A+B THEN 90 |  |  |
| 6. | 10 IF C > A+B THEN 90 |  |  |
| 7. | 10 IF B>A THEN 100 |  |  |
| 8. | 10 IF B/A >= C/A THEN 110 |  |  |
| 9. | 10 IF A * B <= A * C THEN 120 |  |  |
| 10. | 10 IF C/A <= A * B THEN 130 |  |  |

Computer Graphics If - Then Exercise

NAME: CLASS:

IF THEN COUNTER PROGRAM

```
10 J=0
20 J=J+1
30 PRINT J.
40 IF J < 4 THEN 20
50 END
```

1. Write the output of this program.

2. What message would appear if you inserted line 35 STOP?

3. How would you continue running the halted program?

4. Write a program using a FOR-NEXT loop that has exactly the same output.

Study the program below and write in the space below the message that would be printed if the program were run.

Then answer true or false to each statement printed.

```
10 PRINT "YOU ARE NOW LEARNING TO READ BASIC"
20 GOTO 60
25 PRINT:PRINT
30 PRINT "NOW ANSWER TRUE OR FALSE"
35 END
40 PRINT "GOSUB BRANCHES A PROGRAM AND A RETURN SENDS IT BACK"
50 GOTO 100
60 IF B = 10 THEN 1430
70 PRINT "INPUT STATEMENTS ALLOW THE COMPUTER TO ASK QUESTIONS"
80 PRINT "GO SUB BRANCHES A PROGRAM AND RETURN SENDS IOT BACK"
90 REM "I HOPE THIS LINE DOESN'T CONFUSE YOU"
100 B = 10
110 GOTO 60
120 PRINT "REM ALL MATH IN PARENTHESES WILL BE PERFORMED FIRST"
130 GOTO 25
140 PRINT "LEN MEASURES THE NUMBER OF CHARACTERS IN A STRING"
150 PRINT "COLOR CAN BE CONTROLLED WITH IMBEDDED PRINT COMMANDS"
160 PRINT "FOR NEXT LOOPS CAUSE REPETION"
170 GOTO 120
```

NAME:
CLASS:

**NAME:** **CLASS:**

Compare the following three programs and describe the print-out of each one.

```
5 PRINT"CLR/HOME"
10 J = 0
20 J = J + 1
30 PRINT "FELD";J
40 GOTO 20
```

```
5 PRINT"CLR/HOME"
10 J = 0
20 J = J + 1
30 IF J>6 THEN 99
40 PRINT"FELD";J
50 GOTO 20
99 END
```

```
5 PRINT"CLR/HOME"
10 FOR J = 1 TO 6
20 PRINT "FELD"; J
30 NEXT J
99 END
```

1. Write a program using INPUT.

   a. Input the year you were born
   b. Input how many brothers you have
   c. Input how many sisters you have

2. Print each with its proper labels. Example:

```
I WAS BORN IN -------.
I HAVE ------- BROTHERS.
I HAVE ------- SISTERS.
```

3. Write a program using the READ command that would print the following DATA statements in two columns:

```
100 DATA NUMBER OF LEVELS, 4,    SENIORS, 195, JUNIORS, 220, SOPHOMORES,
490, TOTAL, 1600
```

4. Using the same data statements, write a program that will calculate the number of FRESHMAN.

Random Numbers

Name:

Class:

RND (X) or Random Number Function, causes the computer to give you a "surprise" number.

- It's as though the computer spins a wheel of chance.
- It's like pulling a number out of a hat.
- It is unpredictable!

General Form

```
R=INT(x * RND(1) +1)
```

All you need to do is just give "X" the value of a number you wish to be the highest random number between 1 and X.

Example:

```
10 PRINT INT(6 * RND(1) + 1)

20 PRINT INT(4 * RND(1) + 1)

30 PRINT INT(10 * RND(1) +1)
```

Type in the program and run it seveal times to record results.

What are your conclusions?

Random Numbers

Name:

Class:

1. Write a program that will select two numbers between 4 and 20 randomly.

   The first number chosen will be the length of a rectangle, the second number is the width.

   Have the computer draw this random size rectangle.

   (Example: Suppose the computer picks 10 and 14. It will then draw a rectangle whose length is 10 and whose width is 14.)

2. Complete the chart below, by first finding the INT(X) and then determine the ABS(X) of your answer. (20 points)

| X | INT(X) | ABS(X) |
|---|---|---|
| -0.35 | ------ | ------ |
| -1.69 | ------ | ------ |
| 4.64 | ------ | ------ |
| -15.15 | ------ | ------ |
| 0.85 | ------ | ------ |
| 110.71 | ------ | ------ |
| -50.36 | ------ | ------ |
| 0.25 | ------ | ------ |
| -0.15 | ------ | ------ |
| 0.35 | ------ | ------ |

NAME: CLASS:

1. Write a program that will ask for the length and width of a rectangle, then calculate its area. Remember to use the formula Area = Length * Width.

2. Write a program to do the following (using INPUT statements):

   a. INPUT your age
   b. INPUT your zip code
   c. INPUT your weight
   d. INPUT your height in inches
   e. Print each of the above with the proper labels. For example:

   MY AGE IS 15 or I AM 15 YEARS OLD

3. Write a new program using INPUT and a space between each line. PRINT all information (example: MY BEST FRIEND IS --------) to give the following information.

   a. Your best friend
   b. Your favorite subject
   c. Your favorite food
   d. Your favorite movie star
   e. Your favorite color
   f. Your Zodiac Sign

## INT Function

The INT or Integer Function allows you to round off any number into a whole number.

- If "X" is a positive number then the next largest whole number can be found by chopping off the decimal part.

  Example: INT (5.7) = 5

  INT (0.7) = 0

- If "X" is a negative number the next largest whole number can be found by moving down to the next lowest whole number (that is, by making a negative number more negative).

  Example: INT(-0.6) = -1 INT(-3.14) = -4

  INT(-0.2) = -1 INT(-7.28) = -8

Type and enter this program:

```
10 A = 20/3
20 PRINT"$";A
```

add Line 15

```
15 A = INT(100 * A + .5) / 100
```

Explain the results.

Type NEW and enter this program

```
10 REM AREA OF A CIRCLE = 3.14 * R 2
20 INPUT "THE RADIUS IS";R
30 P = 3.14
40 A = P * R 2
50 PRINT "THE AREA OF THIS CIRCLE IS" ;A
```

RUN the program several times to make sure it works. Change the program to chop off all the numbers to the right of the decimal point.

Change the program to make the answer accurate to one decimal place (for example: if R = 1, then Area (A) = 3.1.)

## *TOPIC 125: An Invaluable Motivational Tool*

"Gee, I woke up Saturday morning and wanted to go to school," lamented John. "I wanted to finish my program."* Most teachers never hear such words -- this was "a first" for me!

Art is self-motivating and teaching art is rewarding, but teaching computer graphics has been mind-jarring. I find that computers are mesmerizing and that students are enthralled. I see that computers can be an invaluable motivational tool in every subject area in the high school.

After much consideration, I dumped all the existing graphics software, deciding to teach programming rather then using game-like graphics programs. I spend many hours learning the computer, which was much less difficult than anticipated and many more hours writing a curriculum. It was all worthwhile when I see the expressions on the youngsters' faces as their drawings wind off the printer. It's magic!

I see graphics as a way of teaching computer literacy. (M.I.T. devised the graphics language Logo for use with young children; in the high school Logo, Basic and other languages with graphics potential can be used.) Graphics is a way of teaching programming without words getting in the way. Students learn to boot the system, write programs, edit, list, save, retrieve and print. They learn the rudiments of the Basic language -- print statements, strings, goto, gosub, random remark, tab, for...next loops, locate, etc. Their keyboarding experience is extensive -- they learn all the symbols including the numeric pad since they draw using all keyboard symbols in Text Mode as well as Graphics Mode. They are well-prepared for programming courses.

Art students become quickly adept at the use of the machine. They are immediately interested in the art that they can create on it, and have been successful in drawing pictures, i.e., landscapes and cityscapes, repeat patterns for fabric, greeting cards and animated cartoons. Use of graphics programs in the future such as "Delta Draw" and "Print Shop" will expand literacy; however, I believe that real programming experiences are more beneficial for teenagers.

"How to draw a flag" was the best lesson I've ever taught. Here was integration of subject matter as I've never seen before. The motivation was a flag -- we discussed the number of stars and stripes and what they each stand for (history); we counted the number of lines of stars and multiplied 6 x 5 and 5 x 4 to come up with 50 stars (math); we talked about drop repeat patterns (art); the vocabulary words for the day were pattern, inverse and strings (English); and we wrote the program in Basic using strings, locate and inverse color (computers). Students were motivated, interested and successful. And most important, they learned.

* John Dimino, sophomore, New Utrecht High School, Brooklyn, New York.

Computer classes in most high schools are supervised by secretarial studies and mathematics departments. At New Utrecht High School, now, one teacher from each department is teaching computer literacy -- the hope -- eventually, creative computer teaching in the subject areas.

In art, I have found that computers are an invaluable motivational tool. Major art students can't wait to work with this new medium; basic art students say they find "learning art on the computer much more worthwile than just learning how to draw." Face the reality, computers are here to stay. I truly believe that used creatively in every field, they can change the face of education. I entreat you to meet the challenge!

Joellen Bard, the author of this chapter, is an art teacher at New Utrecht High Schoool, Brooklyn. She is an art writer for Arts Magazine and other art publications.

# CARTOONING

## TOPIC 126: Cartooning - Drawing the Head

Performance Objectives: Students will be able to:

- look at complicated forms as a collection of simple shapes
- use a procedure for drawing a head in simple shapes

Aim: How can we use shape as an element of design? How can we use shape in drawing to analyze form?

Materials:

1. class set of: IBM PC Computers, PC Print Programs, (version 3), mouse for each station, notebooks, sketchbooks, pen and/or pencil visuals: African mask, portrait (realistic)

Motivation:

1. Show visuals: How are these representations of the head the same or different?
2. Discuss the differences in: color, texture, technique, purpose, etc.
3. Discuss the similarities and differences in the features represented.

Development:

1. What do you think was the first step in sculpting that form or drawing (painting) that head? (cutting out a large oval (rectangle, square...) drawing a general outline to hold the features.)
2. Which is more involved with shape for designing?
3. What types of shapes does the artist use? (circles rectangles, squares, etc.)
4. Discuss how artist uses shapes in different sizes to attract and hold attention; how shape can be used for likeness to anatomical structure as well as interesting elements in themselves.

Classwork:

Using basic shapes draw the portrait as an African mask. Work from the largest shapes to the smallest shapes.

Individually:

Be sure to work from largest to smallest shape - general shape, forehead, cheeks, nose, chin, mouth, ears, eyes.

Summary:

1. How may the artist of the portrait have started representing the head? (the same way the carver started - looking for general basic shapes)

2. How will this help us in drawing? (break the form into simple shapes)

3. Why do you think the carver designed in shape? (wanted to exaggerate the form not the person; easier to carve; part of a tradition)

4. Which representation is more real? Why?

Assignment:

1. Try to remember the portrait and continue drawing the head in your notebook.

2. Follow procedure of looking for largest shapes first to represent the head, forehead cheeks, nose, chin, mouth, ears, eyes.

3. Emphasize those features that you remember most.

4. How may emphasis be placed on shape of similar types and sizes to differentiate them?

Additional Assignments:

1. Make a composite head from various photographs.

2. Select a head in frontal position - cut the picture in half - place the half on a sheet of blank paper - complete the picture.

## *TOPIC 127: Cartooning - Drawing the Head (Caricature)*

Peformance Objectives: The students will be able to:

- take notes; make sketches of heads with normal proportions of features
- understand how variations are built on underlying structures
- review procedure for developing a head in shapes

Aim: How may learning about "normal" proportions of a head help in creating cartoon characters?

Motivation:

1. Have class boot up PC Paint and insert classwork disk; write on board; draw on your screens a normal head with normal features.
2. Do you think your drawing will look like all the others? Why?
3. "SAVE" this drawing when finished.

Materials:

1. Class set of: IBM PC computers with mouse, PC paint programs, classwork disks, notebooks, sketchbooks, pen and/or pencil

Development:

1. What is actually meant by a "normal" head? (average, what most look like)
2. What is the general shape of a "normal" head? Select as "normal" what most agree on. (oval, circular, rectangular)
3. Since most select a shape, let's start to construct a head with the general shape of an oval.
4. Considering normal proportions, what will be the next largest feature of the head? What shape will that be?
5. Continue the drawing working from largest feature to smallest. "SAVE" drawing to a new file when finished.
6. How does this drawing compare to first head done today? How same? How different?
7. Draw a head that will be as "abnormal" as possible. Give time limit (about five minutes). How may this be done? (Change the proportions; exaggerate features; enlarge or shrink parts of the head).

Summary:

1. Considering the amount of variety in the human race, which head seems more "real"? Is one more real than another? Why?
2. What would most of the human race look like? (Something between the two extremes would seem "normal").
3. What techniques helped you to develop these characters? (exaggeration, shrinking, enlarging, changing proportions, drawing on proportion).

Assignment:

1. Make a self-portrait ("normal") in basic shapes.
2. What features or proportions are unique to you?
3. Redraw the self-portrait exaggerating your uniqueness.
4. Which is most interesting? Why?

## *TOPIC128: Cartooning - Caricature Drawing*

Performance Objectives: Students will be able to:

- change the features of a simple shape
- drawing to exaggerate particular qualities
- use the shrink and grow tool to alter existing drawings

Aim: How do we use exaggeration to explore a character's unique qualities?

Materials:

1. Class set: IBM PC computers w/mouse, PC Paint Program (version:3), notebooks, pens, pencils

2. Visuals: Copy of "Croquades" by Charles Philipon; "Gargantua" by Honore Daumier.

Motivation:

Compare this visual of Philipon to a recent class assignment - Drawing the Portrait as an African Mask. How are the techniques similiar? different?

Development:

1. Why has Philipon produced this series of drawings? (To make fun of someone; to practice his art)

2. What is the message that Philipon has tried to tell us about his subject? (that he has the qualities, characteristics of a pear)

3. The subject is actually the king of France, Philippe, and the story behind the drawings is that they were used as a defense in a libel suit by the king against Philipon. The Pear, La Polre, also means fathead or dullard in French slang.

4. Why do you think Philipon made these drawings in his defense? (to show the king's actual resemblance to a pear)

Classwork

1. Use your imagination to transform the shape portrait assignment into a caricature.

   Be Aware: The computer program has a "shrink and grow" tool in its "Misc" menu.

   a. Rectangle off the area to be enlarged or shrunk using the "page" pool in the tool box
   b. Select "MISC"
   c. Select "Shrink and Grow"
   d. Rectangle off the final dimensions of the selected area

e. After completion of command modify your drawing to blend in the alteration

Summary:

1. What effect does the alteration have on the personality of the subject?
2. What differences in line have enhanced or detracted from the final effect?
3. What differences in types of shapes selected have enhanced or detracted from the final effect?
4. How has Daumier extended Philipon's caricature?

Assignment:

1. Make a caricature drawing of a personality found in a newspaper or magazine.
2. Consider: what features or combination of features could be altered to transform the subject to reflect an opinon you have?

## *TOPIC 129: Cartooning - Drawing the Head (Detailing for Emotion)*

Performance Objectives: The students will be able to:

. include specific character details into drawings of heads
. use expressive elements of art in line and color

Aim: How can we use details to enhance our cartoon characters?

Motivation:

1. Load a recent drawing of a head on the screen. Imagine this character just walked into a darkroom where 100 people shouted "Surprise"?
2. How do you think this character feels?
3. What do you think would be some of the changes in his expression?
4. Draw these changes on the character as boldly as possible.

Materials:

. Class set: IBM PC computer with mouse, PC Paint program, classwork disk, notebooks, sketchbooks, pen and/or pencil

Development:

1. How have the character's eyes changed? mouth? nose? hair? nose?
2. What types of line would you use to help convey the surprise?
3. Should the type of line be the same for each feature.
4. What color is surprise?
5. Why is this color not the same for everyone?
6. Discuss the effectiveness of different drawings.
7. What makes some drawings more effective than others?
8. Do you know of any cartoonist or cartoon strips that regularly use characters with a wide range of emotions? Explain.
9. How much detail is necessary to show an emotion? (changes with the artist's style).
   Classwork: draw sets of eyes to show various emotions; draw mouths to show various emotions; choose from this list or make up your own. Love, hate, surprise, embarassment, envy, sadness, shyness, etc.
10. Mix and match eyes and mouths in various combinations.

11. How does color enhance or heighten the emotion?

Summary:

1. Re-copy various solutions on the board.
2. Show various lengths to which details are taken.
3. Show simplest and more involved.
4. Which seem to show more surprise? anger? sadness?
5. What can you conclude about the amount of detailing needed? (details were a matter of style and experience with drawing, details were not always necessary).
6. What quality do you think artists look for in trying to show emotions? (which elements can be combined that are necessary).

Assignment:

Search magazines and comics for pictures of extreme emotional responses. Make a file for future use.

## TOPIC 130: Cartooning - Figure Drawing (Gesture)

Performance Objectives: Students will be able to:

- analyze movement and direction through gesture drawing
- practice drawing against time

Aim: How can we use line to show direction, movement, position on a page (screen) and emotion? How can we capture quickly the figure's movement?

Materials:

Class set: IBM PC computer, PC Paint program, mouse, classwork disk, notebooks, sketchbooks, pen and/or pencil

Motivation:

Have student pose for 30 seconds, changing poses every 10 seconds. Count out loud while other students try to complete a drawing of each pose. Have model think of performing specific actions (running, walking, sports etc).

Development:

1. In what direction is the figure moving in the first pose?
2. Does your figure have arms and legs? Head? Chest? Nose? Mouth?
3. What action is taking place - what is the figure doing?
4. Does the drawing that only has a head give the information necessary to convey what the figure is doing?
5. What parts of the figure were necessary to determine what action was taking place? (Head, torso, arms, legs)

Classwork:

Repeat 10 second poses using different models. Try to use the fewest lines possible. Make gesture drawing from imagination of the activities in your daily life.

Questions - Individual Work Time

1. Which poses seemed happy? angry? peaceful?
2. How did the type of line change with how you responded to the pose?
3. Where did straight, curved or angled lines naturally occur? thick lines? thin lines?
4. What parts of the figure helped to show the actions or movement the figure could make? Were eyelashes and fingers important to guessing or realizing the action?

5. Spine, arms, legs were most important to realizing the action. Major movements were the most necessary.

Summary:

1. How may gesture drawing help us in cartooning? What parts of the figure become most important in gesture drawing?

2. What emotion can various types of lines help you capture? which lines for which emotions?

Assignment:

Make gesture drawing of people on buses, on trains, in parks, in the supermarket.

Advanced: Make a 10-second gesture of a model. Continue making 10-second drawings on top of the first gesture drawing.

## *TOPIC 131: Cartooning - Figure Drawing (Line)*

Performance Objectives: Students will be able to:

- make gesture drawings of full figures
- build anatomical structure on initial gestures
- vary linear qualities for dramatic effect

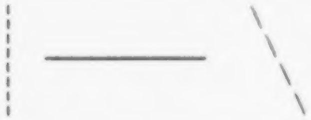
Aim: How can we take advantage of line as an element of design? How can we use line to alter emotional characteristics of the figure?

Materials:

Class set: IBM PC computers w/mouse, PC Paint Program (Version: 3), classwork disks, notebooks, sketchbooks, pens and/or pencils. Visuals: Select drawings of Picasso, Toulouse-Lautrec, Daumier and Aubrey Beardsley for their linear qualities.

Motivation: write on board:

Reproduce this set of lines on your screens:



write below each line what actions they would suggest if they represented people.

Development:

1. What are these types of lines called? Point to each. Write down the name for that orientation (vertical, horizontal and diagonal)

2. What types of actions do each suggest? (standing, resting, running, etc)

3. What additional lines can we use to further suggest a figure? (shoulder width, arms, legs, hands, feet) Draw on board:

Classwork:

1. Construct a figure in line around the first gesture lines: vertical, horizontal and diagonal. You have 3-5 min. for completion of assignment. Work as quickly as possible.

2. What type of lines were used to complete the assignment? (straight, curved, jagged, etc.)

3. How did the various types of lines complement the various line orientations? (the straight seemed to go most with standing, the curved with rest and the jagged with running) Show the various visuals.

Summary:

How did these artists use lines to complement the characters they were portraying? Where were there inventions for lines? (lines made from elements of design change in value and texture next to each other.

How is Beardsley's use of line different from Daumier's? Picasso's? Toulouse-Lautrec's?

Assignment:

Research Aubrey Beardsley in the library. Copy in pen techniques used for creating lines (edges).

## *TOPIC 132: Cartooning - Simplified Drawing (Outline, Contour)*

Performance Objectives: The student will be able to:

- describe the difference between outlining and contour drawing
- experiment with outlining
- experiment with contour drawing

Aim:

1. What is contour drawing and how can it be used in cartooning?

2. How can outlining be used as a style of drawing?

Materials: Class set: IBM PC computers with mouse, PC Paint program, classwork disk, notebooks, sketchbooks, pens and/or pencils

Visuals: comic strips exhibiting various styles of simplified drawing

Motivation: "Re-load a drawing from a past assignment". Use line to go over form and erase construction lines.

Development:

1. What does outlining do to the form? (brings out the shape more; separates it from the rest of the page).

2. "Place your fingertip on the edge of your arm. Follow that edge."

3. Is this the same as outlining? Why? Why not? (follows the edge of the form but does not stay outside all around).

4. What comparisons can you make between forms in contour and forms outlined? (with contouring you can also move inside the forms; in contouring one form can be on top of another).

5. Did you use contour drawing or outlining on your drawing form file?

6. Re-load and try to use a style you did not use.

7. Which style do you feel more comfortable with? Why?

   Show visuals: What other effects do you notice with contour drawing? (Line can change as it moves with form from heavy to light).

8. What can these light and heavy lines correspond with? (light and dark - value).

Summary:

1. Which types of strips seem to use outlining?

2. Which use contour drawing? (more "realistic" seem to use contour drawing).

3. What other element of design is simulated by thin and thick lines? (light and dark - value).

4. What other types of events or changes occur in the line as it follows the form? (twists; turns; curls; etc.).

Assignment:

1. Set up objects on a table and draw in outlines and contour.

2. Draw without first breaking objects into simplified shapes.

3. Imagine yourself as an ant crawling across the objects - the trail becomes the pencil line.

## *TOPIC 133: Cartooning - Figure Drawing (Shape)*

Performance Objectives: The student will be able to:

- develop from gesture lines to shapes in action poses
- show major areas of the figure as shapes
- modify shapes to develop a cartoon character

Aim: How can we use simple shapes in analyzing the forms needed for figure drawing?

Materials:

Class set: IBM PC computer/with mouse, PC Paint program, classwork disks, notebooks, sketchbooks, pens and/or pencils

Motivation:

Boot up your computers and load a gesture drawing onto the screen. Do a 2-minute drawing. Using the pre-programmed circles or rectangles, redraw the gesture looking for major shape needed to identify a figure.

Development:

1. What quality is shown by the shapes? (size, form)
2. How are different parts of the body understood although all shapes are similar? (size, location, length, width).
3. What major areas are necessary to realize the figure?
4. Individual: "Use outlining or contour to blend and merge shapes into a more unified figure" (3 - 5 minutes).
5. Have students point out major areas - head, torso (ribcage and pelvic area), arms, legs, hands and feet.
6. What action is the figure performing?
7. How can you now modify the facial features to indicate the figure's emotions?
8. How can you redraw lines to help express the character of the figure?
9. What types of lines go with a happy character? scared character? lonely character?
10. What colors can be used to further enhance the character and action?

Summary:

1. What steps were used to develop the character?
    a) gesture
    b) simple shapes
    c) details to show emotion and character personality

2. What can you conclude about the steps needed in analyzing or drawing complicated pictures? (look for general movement, look for general shapes, details should support general movements and shapes).

Assignment:

1. Use the steps for developing a character drawing to draw a self-portrait (or model if available).

2. What lines or shapes in front of or behind the figure will help to indicate a place example: corner of a room, wall, chair legs floor pattern.

## *TOPIC 134: Cartooning - Figure in a Space (Texture)*

Peformance Objectives: The students will be able to:

- use texture as a decorative element
- use texture to create spatial relationships
- explore the relationship between texture and value

Aim: How may we use textures in the design of cartoon characters and their environment?

Materials:

- Class set: IBM PC computers with mouse, PC Paint programs, classwork disks, notebooks, sketchbooks, pens and/or pencils

Motivation:

Draw the scene for "a day at the beach" into which you will put your character. (10 minutes)

Development:

1. How did you show the difference between the water and the sand? (color)
2. How did you show the differnce between the sky and the water? (put waves in the water).
3. Although the water and sky may have the same color they may not have the same texture?
4. What is meant by texture? (roughness, smoothness, type of surface).
5. How else besides a change in color could the difference between the sand and the water be shown? Give a technqiue for creating the difference (use stippling - small dots to simulate sand).
6. How has the value changed with the addition of the dots? (sand became darker in places).
7. What could you say about the relationship between the techniques for creating value and texture? (techniques are basically the same).
8. What about the results? (something with a texture will look darker than the same thing without lines or dots for creating texture).
9. Go through the procedure for drawing a figure.
10. "Dress" the figure in various textures. Be aware of a light source and adjust textures for values consistent with a light source.

**Summary**:

1. How does your selection of textures and values affect the personality of the character?

2. Can you identify the fabrics the character is wearing?

3. How can the fabric be simulated?

4. Which parts of the figure seemed closer?

5. Did the textures of clothing correspond with the character's personality the way you wanted them to? Why yes? Why no?

**Assignment**:

1. Look at the various textures where you live?

2. Try to work out technqiues to simulate mood, carpeting, water, hair, metal, steam stucco (wall), glass, fur and skin.

3. What do we call these techniques when not working on a computer? (stippling, hatching, cross-hatching).

4. Does all hatching and cross-hatching require straight lines?

5. Demonstrate your answer on the computer; point out the examples in the visuals.

6. Create a character out of dots (stippling).

# PHOTOGRAPHY, VIDEO AND MOVIE MAKING

## *TOPIC 135: Generating Photographic Images With the Computer*

Performance Objectives: Students will be able to:

- use a video camera with "computer eyes"
- focus the camera
- adjust the F-stop of the camera
- experiment with exposure to depict mood
- experiment with the zoom lens and "framing up" to design and crop the image which is to be photographed
- use "computer eyes" to capture the particular image to be generated by the computer
- demonstrate an understanding of camera shots such as the following:
  - extreme close up
  - close up
  - medium shot
  - medium 2 shot
  - medium 3 shot
  - estabishing short or long shot
- demonstrate a knowledge of camera movements such as the following:
  - zoom
  - pan
  - tilt
  - dollying
  - truck
  - track
- the student will capture an image, save it on a floppy disk
- the student will print out a hard copy of the computer

Aim: How can we generate photographic images with the computer?

Motivation:

1. Display photographic reproductions of some of the following photographers:
   - Ansel Adams
   - Alfred Stieglitz
   - Edward Weston
   - Jacob Riis

2. Lead a discussion about the process by which the above artist have created a feeling of mood within their photographs.

3. Lead a discussion about the process by which these same artist have been able to creatively photograph forms showing them with a new and unique point of view.

Development:

1. How does an artist create mood within the picture plane.

2. What elements of art would you adjust to help create the particular mood which you are attempting to show.

3. What can you do to show a form in a way that you have not seen before.

Procedure:

1. The student will select a mood and subject to photograph.

2. The student will begin to make a determination as to the items he must effect to create the mood which he has undertaken to portray.

3. The student will demonstrate a knowledge of the parts and operation of the video camera:
   - lens
   - zoom lens
   - F-stop control
   - Focal control ring

4. The student will demonstrate a knowledge of various camera shots such as the following:
   - extreme close-up - a detail of a detail (part of a unit) (eye)
   - medium shot - waist up, one talent
   - medium 2 shot - waist up, two talent
   - medium 3 shot - waist up, three talents
   - establishing shot - wide, establishes location

5. The student will demonstrate a knowledge of camera movement such as the following:
   - zoom - gives the feeling of moving in or out (lens movement)
   - pan - lateral rotation
   - tilt - (up or down) a change in the angle of the lens in relation to the subject
   - dolly - the camera moves in or out in relation to the subject
   - truck - the camera moves from side to side in relation to the subject
   - track - the camera moves with the subject usually in the same direction and at the same rate of speed while on line. The subject will stay in focus while the background does not

6. The student will be able to:

   - set up his mood shot
   - subject, angle of camera, light source, focus, F-stop using "computer eyes", lock in the selected shot
   - store in memory
   - print out hard copy of mood shot
   - when complete, begin assignment #2, where the student will attempt to portray a form in a way which he has not seen it before
   - select a form to photograph
   - determine how to let the viewer see the form, through focus, lighting, cropping etc.
   - set up the shot for assignment #2
   - use "computer eyes" to lock in the desired shot
   - store his solution in memory
   - print out hard copy of the computer generated photographic image of the form selected

Approximate time 4 to 5 class periods.

Summary:

1. The students will use computer generated graphics to enhance the concepts of photography discussed on pages 110 to 113 of the Introductory Art in the High School curriclum guide of the Board of Education of the City of New York.
2. The student will create a computer generated photographic image of a figure within an interior which will capture a particular mood.
3. The student will also create a computer generated photographic image of a common object capturing it in a way which may be found to be new and creatively unique.

Assignment:

1. Find and bring into class photographs or reproductions which give you the feeling of a particular mood.
2. Within one paragraph, discuss why those photographs selected were successful in creating a feeling of mood.
3. Find and bring into class one or two examples of a photograph of an object which portrays it in a new and unique way.
4. Write a few sentences discussing the factors that help this unique approach to depict the particular form in question.

## *TOPIC 136: Do It Yourself Movies on the Apple*

Performance Objectives: Students will be able to:

- Students will storyboard a short sequence of scenes they wish to include in their movie.
- Introduce the drawing capabilities of Fantavision - it has a drawing window surrounded by many tools and menu options around the border.
- Demonstrate how to draw in freehand or with rubberband lines, squares, circles and so on.
- Show how these objects can be filled with color, stretched, rotated, squished, cut, and pasted anywhere in the window.
- Explain that one frame of the movie has now been created. Students should then design the second frame of the storyboard.
- Point to a menu box labeled GO to demonstrate the technique called tweening. Fantavision automatically constructs dozens of new frames from the first and second frames and inserts them between the frames to smooth out the transition.

Aim: To make a movie with Fantavision.

Motivation:

How can animation be achieved on the Apple IIc Microcomputer, Fantavision Software, disk drive, monitor and a blank data disk.

Development:

1. Students will create several frames of their movie based on their previously drawn storyboard.
2. They will explore the COPY, MOVE and ROTATE commands to see how they affect their drawings.
3. They may add text to their movie to add titles and credits.
4. The final animation will be saved to their disk.

Summary:

Students will be given the opportunity to see the creations of others in the class, to decide which ones are the most effective.

Assignment:

Prepare a cartoon storyboard that you would like to try realizing on the computer.

## *TOPIC 137: Producing Two-Frame Slide Shows on the Computer*

Performance Objectives: Students will be able to:

- create a two-frame slide show
- understand the various commands that are needed to read a stored binary picture file from a disk into the computer memory
- flip between the frames and be able to control the timing

Aim: How can a two frames be flipped to create an animated effect on a computer?

Materials:

Apple IIe microcomputer, Micro Illustrator program, Koala pad, monitor, disk drive, student's storage disk of pictures.

Motivation:

How can we make an animation with two frames?

Development:

1. Once a set of pictures have been produced (from previous lessons), an easy way to display them is needed. In the examples that follow, pretend we have created and saved three pictures called PICTR.HOUSE, PICTR.CAR and PICT.PEOPLE. To display any one of these pictures requires a short program written in BASIC.
2. Remove the Micro Illustrator disk and insert the data disk containing all the pictures to be used.
3. Restart (boot) the system. The following program will display the house.

Listing #1

```
10 HGR2
20 PRINT CHR$(4); BLOAD PICTR.HOUSE, A$4000"
30 END
```

Type RUN and press RETURN. The screen should go blank and then gradually display the house picture.

Explanation of program:

HGR2 - sets the display for full screen graphics mode. To leave the graphics mode type TEXT. Note: The word TEXT will not be visible until RETURN is pressed.
PRINT CH$4 (4); - produces an "automatic" carriage RETURN within the program. It immediately excecutes any command it preceeds.

BLOAD - loads a binary file such as a Koala picture in memory.

A$4000 - This is the memory location in the computer where the picture will be stored.

4. You may easily include more pictures in your program by adding a few extra lines such as:

```
24 PRINT CHR$(4);  "BLOAD PICTR.CAR, A$4000"
26 PRINT CHR$(4);  "BLOAD PICTR.PEOPLE, A$4000"
```

5. The Apple IIe computer uses two graphic "pages". Page 1 begins at memory location A$2000 and Page 2 begins at A$4000. This means that two pictures can be stored simultaneously. Either page may be displayed instantly at any time within a program using POKE 49236,0 to display page one or POKE 49237,0 to display page two. The following program is an example of what can be done with these commands:

Listing #2

```
10  HGR2
20  PRINT CHR$(4); "BLOAD PICTR.HOUSE, A$2000"
30  PRINT CHR$(4); "BLOAD PICT.CAR, A$4000"
40  CALL - 678
50  POKE 49236,0
60  CALL -678
70  POKE 49237,0
80  END
```

6. RUN the program, then press RETURN to see what happens. In this program, PICTR.HOUSE is loaded into location into page 1 (A$2000) of memory and PICTR.CAR is loaded into page 2 (A$4000). Call -678 tells the computer to wait until a RETURN is pressed before continuing. Line 50 displays page 1 and line 70 displays page 2. If you like this effect you may change line 80 to read:

```
80 GOTO 40
```

7. For some purposes it may abe desirable to have a self-paced program that changes pictures automatically after a period of time. This can be done by simply changing lines 40 and 60 to include a delay loop.

```
40 FOR D = 1 TO 2000 : NEXT D
60 FOR D = 1 TO 4000 : NEXT D
```

In this case line 60 will "wait" twice as long as line 40.

<u>Summary</u>:

By drawing and saving two slightly different pictures, simple animation may be accomplished with relative ease. For example, a smiling face is drawn under the name "PICTR.SMILE". Using the Koala pad the same picture is changed (edited) so that the smile becomes a frown. This new picture is saved under the name "PICTR.FROWN". By "flipping" these pages, using the same program shown in Listing #2, the face seems to come alive! The possibilities are endless.

## *TOPIC 138: Using Movie Maker to Create Animated Cartoons on the Computer*

Performance Objectives: Students will be able to:

- compose images on the first frame by selecting from a library of shapes stored on the disk
- construct a sequence of images made up of selected pre-drawn images and be able to control the playback rate
- create music and special sound effects to synchronize with the visual action
- evaluate their sequence by discussing its composition, timing and synchronization

Aim: How can Movie Maker be used to create animated cartoons on a computer?

Materials:

Apple, Atari or Commodore 64/128 Computer, monitor and joysticks, Movie Maker software and a blank storage disk.

Motivation:

How can sound and pictures be combined in one program?

Development:

1. Boot side B by loading "AP",8 which will Autoplay a sequence of movies that were created with this program.

2. Discuss the various elements that go into the making of a cartoon.

3. Boot the main program on side A and demonstrate how selected images are captured and placed on the composing screen.

4. Explain that background, and actors are the main elements you work with in the beginning. Sounds are created afterwards.

5. Show how to read background and actors from the library of images already on the disk, how their positions are composed into the movie frame, and how a sequence is created by selecting S1. Explain how color is selected with the "C" command.

6. Discuss the commands to start running the show, by typing "A" for action and the space bar to begin, the actors "spring to life".

7. Explain the various commands for controlling the timing such as "F" for frame rate followed by a number from 1 to 9. Number 4 is the normal rate. The "L"-number shows the number of loops the current sequence is to run. The "K"-number indicates the "Kwickness" rate (usually 1) and the "J"-number shows the "Jump" rate, J1 indicates the smallest jumps and J9 the largest.

8. Show how sound can be added to the movie by selecting V1 (for voice 1) while the film is running.

Summary:

Each film is critiqued for its content, use of controlled events, synchronization and composition.

Assignments:

Each student will be given the chance to compose a short animated cartoon.

More advanced students will want to experiment with the sound effects library.

## TOPIC 139: Digitizing a Video Image

Performance Objectives: Students will be able to:

- understand that Computer Eyes will capture and digitize a video image
- determine the best scan rate to record their image. This controls the values or the number of gray levels
- save their images on a disk as a normal or compressed file
- Students will be able to print the image on a dot matrix printer as an iron-on transfer

Aim: How can a computer digitize a captured video image?

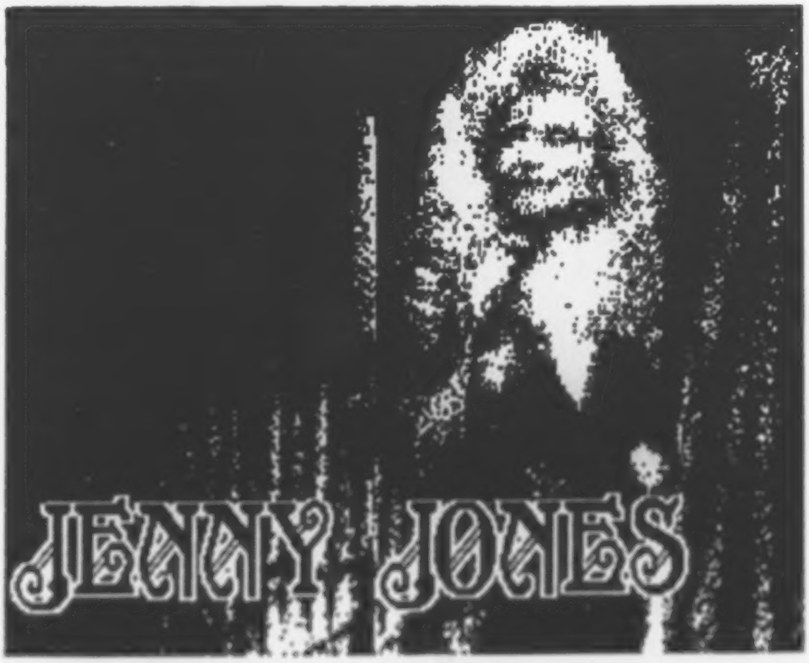
Materials:

Computer Eyes module, video camera, Commodore 64 or other suitable computer, Computer Eyes software, a screen dump program or the Print Shop program (suitable for adding text through the Screen Magic Mode), printer.

Development:

1. Students will be shown examples of T-shirts with digitized pictures on them. Then there will be a demonstration of the adjustments necessary to begin digitizing an image from a video camera.

2. After the "Sync" adjustment is made and the brightness level is selected, the "N" is pressed to capture the image. For a normal scan, it takes six seconds for one complete scan. It is possible to get better resolution and more gray tones if different scanning rates are selected.



3. Students will compose the scene with the video camera and capture the picture using the "N" command.

4. They will be given the chance to save five or six images on their disk.

5. For those students desiring to add text to the picture, they may boot the Print Shop program and load their captured image through the Screen Magic option. The files are perfectly compatible.

6. The images may then be printed out normally or reversed, depending on preference, by using that option of Print Shop.

Summary:

After the print-outs are complete, each student selects one to be printed as an iron-on transfer. Special ribbon is used in the printer to achieve these results.

Assignments:

Students will try to capture a personality portrait of each other using the video camera. They will try to capture some particular aspect or trait of their model.

Advanced students may wish to convert their pictures to DOODLE! files using a program converter, like Chameleon, then further modify and embellish their images with added features such as optical lines and zoom in to modify the image on a pixel level.

## *TOPIC 140: Cropping a Picture*

Performance Objectives: Students will be able to:

- draw a freehand drawing on the computer screen, in the upper left-hand corner
- use the copy command to place the image in the three other quadrants of the screen
- frame each drawing, with various size rectangles using the outline box command, placing the enclosed drawing in different areas of the rectangle
- select the best composition and explain why they chose that particular placement

Aim: How can cropping of a picture affect the visual dynamics of a composition.

Materials:

Apple IIe, Blazing Paddles software, Koala pad or mouse.

Motivation:

How can composition affect the visual impact of a computer generated graphic?

Development:

1. Each student will draw an original object that can easily be drawn by them using the sketch mode using less than 1/4 of the screen.

2. The window command is used to "rubber stamp the drawings in three other areas of the screen.

3. The outline box command is then used to surround each of the four drawings in different ways.

4. The students will be introduced to the elements of composition and will understand that objects placed in the center of the rectangle tend to produce static compositions.

5. They will also realize that objects placed near the edge of the rectangle will create a visual tension and will need a counter-balancing element to offset this situation.

Summary:

How can we place objects on a computer screen so there is a balance between the elements and the total area?

Assignments:

Students will redraw the selected image so it will use the entire screen and save the drawing on a disk.

Advanced students may choose to experiment with the fill command to explore the effects that filled areas have on the visual dynamics.

## TOPIC 141: Photographic Lighting

Performance Objectives: Students will be able to:

- explore how lighting affects a printed computer image that was captured with a video camera
- explain how the scanning rate determines the number of gray levels
- compare a normally scanned image with a high contrast photograph of the same object and explain the aesthetic differences between the photograph and its computerized counterpart
- determine when a computerized image is more appropriate or desirable than a photograph

Aim: How can a computer be used to demonstrate photographic lighting?

Materials:

Computer: Apple IIe or Commodore 64.
Peripherals: Computer Eyes module with camera and software, printer, high resolution screen dump utility. (Beagle Bros. Triple-Dump for Apple, Freeze Frame or Hardcopy for Commodore.)

Motivation:

How can we capture a video image and print it with a computer?

How does the lighting affect the values of a scanned image?

Development:

1. Students will be given an opportunity to photograph a class member with a video camera.

2. They will shift the main light to change the shadow areas and determine which mood is most appropriate for that individual.

3. The desired portrait is then captured with Computer Eyes by first adjusting the sync and brightness level and then pressing N to begin a six-second scan.

4. Students will see that even a slightly out of focus image will produce an image with jagged edges.

5. They will then experiment with the 4 and 8 level scans and see the visual effects and patterns the gray tones present.

6. They will compare this image with a high contrast photograph and determine what subject manner may be more appropriate as a digitally-scanned print?

Summary:

What is the main difference between a high contrast photograph and a digitally-scanned print?

Assignments:

Photo students may try to photograph various objects with the idea of transforming their photo by pointing the video camera at the photograph to transform it into a digitized image.

Note: The Computer Eyes program allows you to save the captured image on a disk, but makes no provision for printing the images prior to saving it.

In fact it makes no provision at all for printing the stored images. Any graphic utility program that can read a binary picture file can be used to send the picture stored on the disk to the printer.

By using a resident program that sits under Basic, such as Hard Copy or Freeze Frame, a printout could be made before the save to disk, to determine if the picture is worth saving.

# TOPIC 142: Shooting Computer Graphics From a Monitor or TV Screen

Once you and your students have created exciting computer graphics, you could save them, but whenever you wanted to show this artwork you would have to boot the program and load the picture file into screen memory, which means you would need your computer for display as well as the creation of the graphic images.

If you want to photograph the screen directly, here is how to do it:

Although you could use almost any camera, the best results occur when you use a 35mm SLR camera.

You could use any of the popular 35mm films but we found that Daylight balanced film gives the best colors. In our studio we regularly use Kodak Ektachrome for color slides (ASA 64 or 200) as well as Kodachrome ASA 64. But don't be afraid to experiment with your own favorite films.

There are a few hard and fast rules that apply to photographing from a color or black and white monitor, but our experience has resulted in certain procedures that we know give us the best results.

1. Always use a tripod. A hand-held camera will give you a soft edge.

2. Be sure to align your camera so the film plane and the screen are parallel. Otherwise you will get distortion.

3. Shoot in as dark a room as possible. The darker the better. This does two things. First it minimizes reflected light on the screen itself. Secondly, it enhances the computer's image by setting the colors in a black background. If you see reflections on the screen through your cameras lens, you will get them in your picture. Carefully adjust the camera and the screen to lose, or at least minimize those reflections. If you can't darken the room, try darkening the area around the screen, by using a dark cloth or large black plastic garbage bag, or a shadow box made of non-reflective illustration board. Wear dark clothing when you are shooting or get out of the way or you will be reflected.

4. Check your shutter speed. This is critical since a photo from your screen frequently shows a diagonal slash, which is invisible to the naked eye. This slash is actually the interlacing of the horizontal scan lines that create the TV image. To eliminate this scan line shoot at a 1/15 or slower.

5. Select the appropriate aperture setting. Remember, you could increase or decrease the amount of light with the brightness and contrast controls on the monitor. Use external or built in light meters to determine a starting point. Aim the meter at the brightest part of the scene.

6. Bracket your shots. That is, shoot at normal, one stop over, one stop under.

7. Shoot a test roll. Record everything you do when shooting the test roll: f/stop, shutter speed, ASA setting, film stock, etc. Later compare notes with actual photos. A test roll is not a waste of film, because then you will know what you'll be doing next time.

# ARCHITECTURE

## TOPIC 143: Architecture

Subtopic: Designing a floor plan for a one-family structure of 2000 square feet.

Performance Objectives: Students will be able to:

- create a floor plan design with four activity areas
  - kitchen/bath
  - bedrooms/bath
  - living area
  - entry area
- position windows
- position doors
- position bathroom fixtures
- position kitchen facilities
- scale floor plan
- use the IBM computer program "Dr. Halo"

Aim: How can you design a floor plan for a one-family structure of no more than 2000 square feet?

Materials:

- "Dr. Halo" drawing program
- IBM PC computer
- printer

Motivation:

How can you design a one family structure so that all living needs may be provided in 2000 square feet?

Development:

1. Review the floor plan homework assignment.
   a) discuss the relationship of the three main living areas to the design of a one-family structure, stress the following:
      - design/space limitations
      - relationship to each other to accomodate traffic flow

2. Windows
   a) North and South
   b) cross-ventilation
   c) relationship to plot/view

3. Doors
   a) entry/exit
   b) traffic flow

4. Multi-function areas/open spaces
   a) discuss past student floor plans
   b) discuss professional floor plans
   c) discuss masters of architecture

5. Demonstrate how "Dr. Halo" drawing program may be used to design a floor plan.
   a) boot up "Dr. Halo" in the A drive
   b) place the joystick or tablet cable into the game port
   c) place the student's data disk into the B drive
   d) demonstrate
      . thick lines to reprwesent weight bearing walls
      . thin lines to represent partitioning walls
      . double line to represent windows, over-lapping lines to represent sliding glass doors
      . symbols for sinks, toilets, stove, refrigerator, and built-in cabinets
   e) demonstrate how to edit and make corrections in the floor plan
   f) demonstrate how to save a floor plan program on the data disk
   g) demonstrate how to print a picture from the data disk
   h) give the class the studio assignment

**Apperceptive Base**:

1. Students received the following homework assignment in preperation for this computer design lesson.

2. Design a floor plan for a one-family structure with an area of 2000 square feet.

3. Include in your design the following:
   a) kitchen area
   b) living area
   c) bath
   d) entry

4. In each room you design, provide:
   a) exits and entries
   b) windows
   c) allow for entry into high activity areas without passage through the sleeping areas.

   Size: Each area is no longer than 6" x 6" (your scale will indicate actual room size)

   Materials: pencil, paper, and ruler

**Application**:

1. Studio assignment

2. Design a floor plan for a one-family structure with an area of no more than 2000 square feet

3. Include in your design the following:
   a) kitchen area
   b) living area
   c) sleeping area
   d) bath
   e) entry

4. Base your design on your homework assignment, class discussion and examples of floor plans you have reviewed.

5. Design each area, save on your data disk, and print.

6. The class begins to work.

Medial Summary:

Review two or three floor plans in progress and discuss them with the class in terms of previously stated instructional objectives.

Continued Application:

1. Students should continue to create their floor plans, saving their work on data disks and printing their floor plans.

2. Each room is designed, saved and printed seperately, and all the rooms are designed to the same scale.

Final Summary:

1. Select four or five floor plans for class discussion. Review the following:
   - a) relationship of design to space limitations
   - b) relationship of activity areas to each other
   - c) position of windows to area design
   - d) position of entry/exits to area design
   - e) use of multi-function areas
   - f) discuss how "Dr. Halo" drawing program was used to its best advantage in drawing the floor plans

2. Turn off the computers and printers, remove all program and data disks.

Homework Assignment:

1. Design four elevation views of your one-family habitat. Relate the position of windows and entries to your floor plans.

2. Indicate building material when drawing the elevation views.

3. Design a roof that relates to the elevation views.

4. Scale: relate to floor plan.

5. Materials: pencil, paper, ruler.

References:

- "Dr. Halo" drawing program users handbook
- "Introductory Art in the High School"
- past student work
- work of professional architects

## TOPIC 144: Architecture

SubTopic: Designing four elevation views and a roof for an existing floor plan.

Performance Objectives: Students will be able to:

- create four elevation views that accomplish the following:
- relate in scale to an existing floor plan
- relate to windows in existing floor plan
- relate to entry and exits in existing floor plans
- relate a roof design to the climate, lot, theme, shape, and needs of client
- use the IBM computer and "Dr. Halo" drawing program to draw and print four elevation views and a roof design

Aim: How can you design four elevation views and a roof for an existing floor plan?

Motivation:

How can you design elevation views and a roof so that your structure will relate to your floor plan?

Materials:

- pencil, paper, ruler
- "Dr. Halo" drawing program
- IBM PC computer
- printer

Development:

1. Review the elevation plan and roof design homework assignment.

2. Discuss the relationship of the four elevation views to the floor plan.

3. Evaluate the relationship of the windows to the floor plan.

4. Discuss the relationship of entries and exits to the floor plan.

5. Evaluate the roof design to the elevation views in terms of:
   a) design
   b) climate

6. Demonstrate how "Dr. Halo" drawing program may be used to design elevation views and roof design.

7. Demonstrate how to edit and make corrections in elevation views and roof designs.

8. Demonstrate how to print a program from the data disk.

9. Give the class the studio assignment.

Apperceptive Base:

1. Students received the following homework assignment in preparation for this computer design lesson in architecture.
   a) design four elevation views that related to a floor plan at a one family structure with an area of 2,000 square feet

2. Include in your design the following:
   a) windows
   b) sliding glass doors
   c) entry/exits
   d) indicate construction materials
   e) roof design

Size: Each elevation view is no larger than 6 x 3 (your scale will indicate actual wall size)

Application:

1. Studio assignment.

2. Design four (4) elevation views that relate:
   a) to the climate
   b) building lot
   c) theme of structure
   d) shape of floor plan
   e) position of windows and entries
   f) to needs of clients

3. Design a roof that relates:
   a) to the climate
   b) building lot
   c) theme of structure
   d) shape of floor plan
   e) position of windows and entries

4. Use the IBM computer and "Dr. Halo" drawing program to draw and point:
   a) four elevation views
   b) roof design

5. The class begins to work.

Medial Summary:

Review two or three elevation and roof plans in progress and discuss with the class in terms of previously stated instructional objectives.

Continued Application:

1. Students should continue to design four elevation views and a roof design, saving on their data disks and printing each elevation view separately.

2. Each elevation view and the roof design is designed to the same scale.

**Final Summary:**

1. Select four or five printed sets of elevation views and roof designs. Review the following:
   a) Relationship of:
   - elevation views to floor plan
   - position of windows
   - position of entry and exits

   b) Relationship of:
   - roof to floor plan
   - roof to lot
   - roof to elevation views

2. Discuss how "Dr. Halo" drawing program was used to its best advantage in drawing the elevation views and roof design.

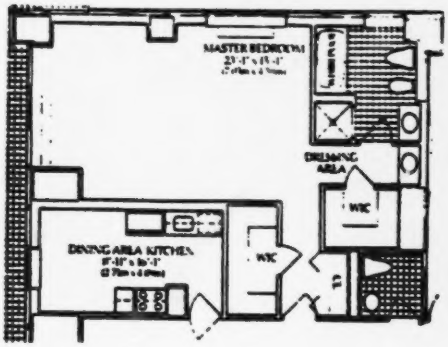
3. Turn off the computers, monitors, and printers. Remove all program and data disks.

# *TOPIC 145: Two-Dimensional Line for Drawing and Designing*

Sub Topic: Floor Plan to Scale and Elevation

Performance Objective: Students will be able to:

- define draft, scale and elevation
- refer to linear conventions universally used for creating floor plans
- create a drawing to scale of a familiar room
- create a floor plan of an imagined or familiar place



Aim:

What is a draft? How is line used as a drafting element? What is scale? How can we make a draft of a floor plan to scale? What are the architectural drawing conventions needed to produce a floor plan? How can we use these symbols in the line drawing representative of any architectural rendering? How can we use one-point perspective to produce an elevation? To enhance pgs. 132,134, and 135 of the NYC high school art curriculum guide.

Materials:

Apple II, II+, IIe, IIc or compatible with 48K bytes, Baudville's Blazing Paddles, or Koalaware's Micro-Illustrator. Teacher can use Data Transforms Fontrix's floor plan font. The elements of the architectural drawing conventions can be linked together to create a floor plan. (If 128K is available, student can use Broderbund's Dazzle Draw), DOS 3.3 disk drive, Video monitor, a Koalapad Touch Tablet or some method of moving the cursor, one formatted diskette per student, one software disk per three students, pencil and paper, rulers

Artists - refer to floor plans and elevations from architecture magazines or periodicals

Motivation:

Teacher will asks students to make a rough pencil drawing of the floor plan of their bedroom or living room at home. The view should be taken from the bird's eye or as if one is looking from above down at the entire room. Teacher will give students five minutes to complete.

Procedure:

Teacher asks the class if any students have had any experience in drafting, blueprint or archtectural drawing.

1. What is the expertise needed in this type of work? What is a draft? (a draft is a construction plan, a delineation or representation in drawing form)

2. What are the elements needed to draft a floor plan? (the architectural drawing conventions of specific parts of the construction - such as the walls, windows, doors, and doorways, stairs and columns)

3. Teacher can either hand out a rexographed sheet, bring up on a computer monitor a prepared diskette of the symbols, or use Fontrix's floor plan font)

4. What does your bedroom look like in your floor plans sketches? (students describe their rooms)

5. How can we create a floor plan to scale? (we set ratios between the real measurements of the floor space of the room to be able to fit within the limits of the monitor)

6. We can use feet = space (or characters) on the keyboard. We can use feet = inches on the computer monitor screen.

7. Let's say your room is 12 feet by 10 feet. The monitor is 40 spaces down by 24 spaces across. We can set our scale to one foot = two spaces. The monitor is 7 inches across by 6 inches down. We can set our scale to one foot = 1/2 inch

8. For every foot, we will use a graphic character on the keyboard and type two spaces or use our rulers and measure the half inches on the monitor screen to create scale. We'll begin with the outline of the room.

9. Open the disk drive door. Hold the diskette with the label end facing you. Insert the diskette with the label facing up into the disk drive and close the door. Now, turn on the monitor and turn on the computer.

10. Follow the directions on the screen using the keys on the keyboard and the palette or main menu will appear on the screen. For this lesson, we will limit the menu to the "LINE" command. We will limit "BRUSH" to the small dot.

11. Let's begin with "LINE". Place the stylus on the Koala pad and place the cursor on the screen to "LINE". With your other hand, press the top left button of the Koala pad. The screen will become a blank page ready for you to draw on. Now, press the stylus onto the pad and see the cursor appear on the blank screen.

12. Draw a line and move it around the screen with the stylus. Place the line to the proper point and press the top left button. Find the next line to start with the cursor. Press stylus on the pad and again, see the cursor and press the top left button to begin the next line.

13. Begin with the outline of the room design. Make the line a solid line to scale out only the outer dimensions of the room on the screen. Complete the outer dimensions to scale.

14. What is an elevation? (an elevation is a floor plan which also contain height) To make an elevation, chose a dot somewhere outside of the shape of the room. Connect the corners of one side of the room to this point.

Summary:

Lines comprise the architectural drawing conventions used to draft a floor plan or any construction drawing. Scale is the mathematical ratio used to create a floor plan to proper dimensions. We can use one point perspective to create the illusion of depth to the floor plan. This is an elevation.

Homework/Assignment:

The student can complete the floor plan of the room using shapes in scale to represent the furniture, doors, windows, stairs, etc. The student can use one point perspective to create the elevation.

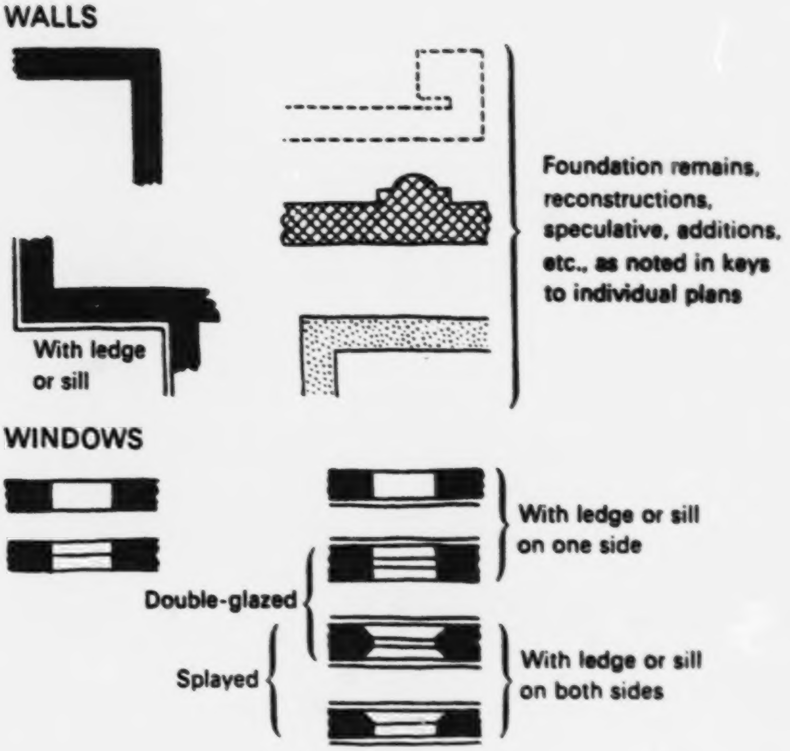
Extra:

Design the floor plan for a house in space, any futuristic structure in which people must live or work or play. The student is to save the drawings on a formatted data disk. The student is to document the drawing by naming it with student's last name and class, and name drawings. Save the class exercise as "Room Plan"

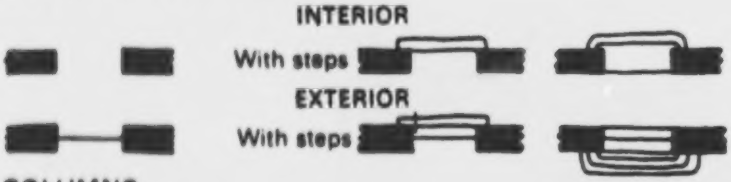
Note: For ERASERHEADS - There are various ways to erase. You can erase the whole screen by touching the pressure sensitive pad with your finger or the stylus to move the cursor to "ERASE" and follow the instructions by choosing the color you wish the screen to turn to. You can erase a single line by changing the color to the background color and (a) try to recreate the line to be erased with a thicker brush or (b) change the command to "BOX" and "black box" and dot the line area out.

# Architectural - Drawing Conventions

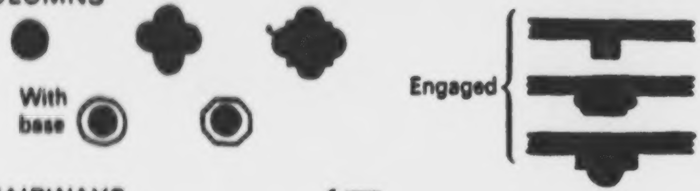
## PLANS


WALLS
With ledge or sill
Foundation remains, reconstructions, speculative, additions, etc., as noted in keys to individual plans
WINDOWS
With ledge or sill on one side
Double-glazed
Splayed
With ledge or sill on both sides

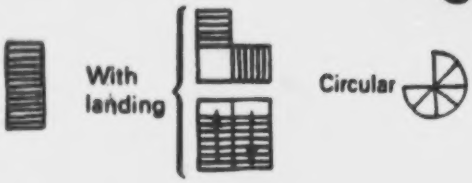
## DOORS AND DOORWAYS


INTERIOR
With steps
EXTERIOR
With steps

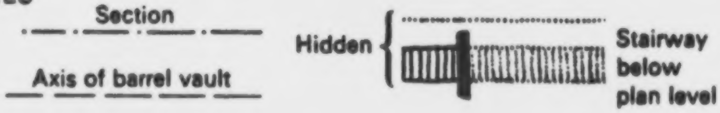
## COLUMNS


With base
Engaged

## STAIRWAYS

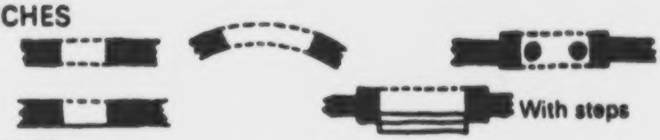

With landing
Circular

## LINES

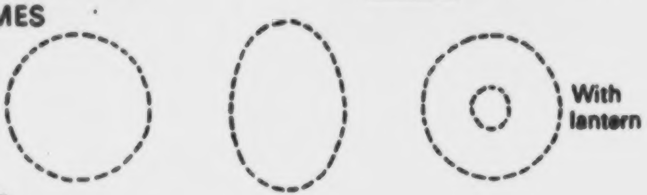

Section
Axis of barrel vault
Hidden
Stairway below plan level

**Reflected-ceiling plans**

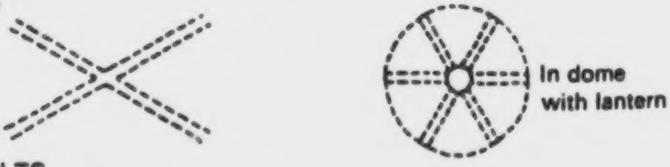
## ARCHES



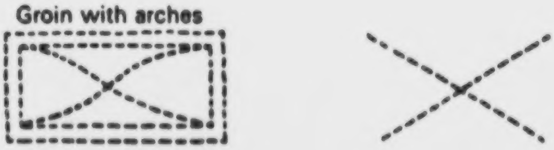
## DOMES


With lantern

## RIBS


In dome with lantern

## VAULTS


Groin with arches

## *TOPIC 146: Creating a Floor Plan*

Performance Objectives: Students will be able to:

- create a coherent floor plan
- add multi-levels and extensions
- shape space into rooms

Aim: How can we create an architectural floor plan for a dream house?

Materials:

IBM computer
drawing software

Motivation:

Look at familar spaces

Classroom, entire building, your apartment or house, public building, churches, courts. Discuss relationship of walls to ceiling, windows to wall, etc.

Development:

1. What are the effects created by enclosed spaces?
2. Do you feel closed in? intimidated? cozy?
3. How were these feelings acheived?
4. Think about your perfect Dream House
    a. What does it look like?
    b. How many rooms does it have?
    c. Where are the windows?
5. Look at floor plans used by builders
    a. How did the architect show doors, windows?

Using the Computer

Place a grid across your screen using a light color (this grid will act like graph paper). Using the grid, plot out your rooms and spaces using a darker color than the grid. Design each space for practicality, effective space usage, function. To give yourself a control for size, assign a square space size (i.e. 1 square = 1 square foot)

Application:

1. Have you considered the height of your ceilings?
2. Do you have several doors opening into one space? Will you have doors colliding into each other?
3. Have you added enough windows? Too many?
4. Does your house make a statement about you?

Summary:

The architect/designer must not only be innovative and creative but a good mathematician. Explain this statement.

To show an additional floor, you must add another plan, marked SECOND FLOOR

1. Does a room have to be square/rectangular? Give examples.

Assignment:

Housing and buildings have always been a primary concern for people. Through out history people have developed housing facilities.

1. Make a list of different styles of housing men have used.
2. Then try to name a distinguishing feature of that type of dwelling.
3. Can you think of a modification or usage of that feature used today?

Example

| Group Using Dwelling | Type of Dwelling | Feature | Use Today |
|---|---|---|---|
| Prehistoric Man | Circular Stone Huts | Open Top | Skylights |
| Prehistoric Man | Rectangular Huts | Post & Lintel | Doorways |

## *TOPIC 147: Interior Design - Designing Interior Spaces for a One-Family Home*

Performance Objectives: Students will be able to:

- create shapes for interior spaces:
  - living/dining room
  - bedroom
  - kitchen
- create shapes that indicate furniture
- scale
  - rooms
  - furniture

Aim: How can you design an interior space that has multi-functions for a one-family home, using the IBM computer and "Dr. Halo" drawing program?

Materials:

- "Dr. Halo" drawing program
- IBM PC computer
- printer
- rubber cement/scissors
- drawing paper/pencil

Motivation:

Describe how the computer can assist you in designing an interior space that includes furniture.

Development:

1. Review the interior design homework assignment.
2. Discuss how the interior drawings:
   a) relate to the room theme
   b) relate interior design to walls/windows/doors
3. Discuss relationship of symbols to furniture.
4. Discuss relationship of furniture to interior space and theme.
5. Discuss past student work.
6. Evaluate work of professional interior designers.
7. Demonstrate how "Dr. Halo" drawing program may be used to draw:
   a) exterior walls/interior walls
   b) windows/doors
   c) furniture symbols
8. Boot up "Dr. Halo" in the A drive.
9. Place the joystick or tablet cable into the game port.

10. Place the student's data disk into the B drive.

11. Demonstrate:
    a) drawing straight lines for interior walls
    b) drawing thick lines for exterior kitchen/play area
    c) drawing free-hand shapes for furniture symbols
    d) estimating scale
    e) how to erase parts of a drawing
    f) how to save the drawing on a data disk
    g) how to print the drawing from the data disk

12. Give the class the studio assignment.

Application:

1. Studio assignment.
    a) based on your homework assignment and the class discussion, and using the computer, design the following:
    . an interior space for one of the following areas:
      1 living room/dining room
      2 three bedrooms/two baths
    . indicate
      . scale
    . exterior/interior walls
    . windows/doors
    . furniture in plan view through symbols
    . the class begins to work

Medial Summary:

Review two or three interior designs in progress with the class in terms of the previously stated instructional objectives.

Continued Application:

1. Students should continue to create their interior design projects, saving the pictures after each step.

2. Save and print the exterior and interior plan.

3. Save and print frequently the furniture symbol drawings.

4. The cutting out of the furniture symbols, positioning the furniture in relationship to the room design, and the paste-up of the furniture symbols may be accomplished as a follow-up studio lesson or a homework assignment.

Final Summary:

Select four or five printed interior design projects for class evaluation. Discuss the following:
    a) relationship of exterior walls to interior walls
    b) function of furniture to be placed
    c) relationship of symbol to furniture
    d) relationship of scale to furniture symbol drawings

**References:**

- "Dr. Halo" drawing program users handbook
- "Introductory Art in the High School"
- past student work
- profession magazines
  - Interiors
  - House and Garden

## *TOPIC 148: Designing a Public Space*

Performance Objectives: Students will be able to:

- understand the space in public areas
- relate emotional experiences of these places
- discuss and use historical significance and needs of public places.

Aim: To design a public space: a garden or park

Materials:

IBM computer
drawing software

Motivation:

A visit to (or slides of) the "Astor Garden Court" at the Metropolitan Museum of Art. The Astor Garden Court is a reproduction of a courtyard from the "Garden of the Master of the Fishing Nets," which was constructed in Suzhou, China in the 18th century.

Keep the room quiet, try to achieve a feeling of calmness. Read the following out loud.

Reading #1

The white wall serves as paper, and upon this one paints with stones. Those who perform such works should in the first place pay attention to the furrows and lines of the stones, and then dispose them in the light of the old Master's ideas. One may then plant Huang-shan pines and firs, or old plum trees or beautiful bamboos. If one contemplates such a painting through a round window, it is like wandering in a mirror.

Reading #2

The banana tree is more than ten feet tall;
After rain it is clean as though washed.
It does not dislike the high white wall,
It elegantly matches the curved red balustrade.
Cool Autumn sounds come to my pillow,
Green morning colors are seen through the windows.
Let no one take to the heedless shears,
Leave it until its shade reaches my house.

Wen Zhengming

Development:

1. What strikes you most after hearing these passages and seeing the Astor Garden?

2. What quality was the planner trying to achieve in this garden?

   a. Compare the peaceful Chinese garden to other public place. What differences do you find, for example, between this garden and Central Park?

   b. List some public spaces you have visited that have a garden-like quality or area you can relate to.

3. What is the function of a public space?

4. What activities are found going on there?

5. Should a public place always be quiet? loud? Why?

6. Name some of the challenges a public planner must face and conquer when designing a park.

## Using the Computer

Design a public park or garden (or area of a larger park). Using the same grid format as you did for the floor plan, make your squares into feet or yards as you see fit (after you draw your layout we will construct these in miniature).

Think about the activities that will take place in your park. You may select one of the suggested parks below or one of your own.

1. City pocket park in a business area

2. City pocket park next door to a day care center

3. An old estate being donated to the public

4. A newly-discovered overgrown garden to be revived

5. A section of a large park that is being dedicated to a famous person.

## Summary:

1. What is the most important goal of the public planner?

2. How does he/she meet these goals?

3. What feeling do you get when you're in a park or garden?

4. Does every park need statues and fountains?

## Application:

One way of creating order from chaos and a feeling of inner peace that most people expect from parks is to follow some theories set up by the Chinese. Most of us have heard of Yin-Yang.

1. Can someone describe the theory of Yin and Yang? (use of complementary opposites).

**Assignment**:

Using the worksheet provided (teacher should prepare in advance) look again at Astor Court and find areas that fit into the Yin/Yang principle. Then look at your park, find places there that fit into this principle.

## Gardens and Parks Worksheet

### Yin - Yang Principles of Complementary opposites

| Yin | Yang |
|---|---|
| Shadow | Sun |
| Earth | Heaven |
| Passive | Active |
| Dark | Light |
| Female | Male |
| Stillness | Movement |
| Even numbers | Odd numbers |
| Absorption | Penetration |
| Duality | Monality |
| Valleys | Mountains |
| Cold | Heat |
| Water | Fire |
| Void | Mass |
| Cool | Warm |
| Space | Solid |

# STAGE CRAFT

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## *TOPIC 149: Creating an Architectural Floor Plan for Stagecraft Lighting and Set Designs*

Performance Objectives: Students will be able to:

- draw a floor plan of the stage area with the computer
- demonstrate a knowledge of the areas of the stage
- demonstrate a knowledge of lighting units by selecting and placing them properly within the floor plan
- demonstrate a knowledge of designing with or organizing space by placing set material within a floor plan computer drawing

Aim: The student will create two floor plans of the stage area. One of them will contain set material and one of them will contain lighting units for a particular scene from a play.

Motivation:

1. Show the student photographs of set frame post school show. (e.g., Guys and Dolls, The Playboy of the Western World, Fiddler on the Roof, Grease, Godspell, Sweet Charity etc.)

2. Show the student's working set design drawings from past shows.

3. Show the student's reproductions of lighting floor plans from books (e.g., scene design and stage lighting).

4. Visit the stage area to take measurements for the scale drawings which will follow.

Development:

1. How important are floor plan architectural renderings?

2. What do you feel is their purpose?

3. How can a stage set or lighting designer utilize floor plans?

4. What are the different areas of the stage?

5. Proscenium style stage areas:

   - stage - performance area
   - right and left wing - sides of performance area
   - apron - is the area from the edge of the stage to the front curtain
   - pit - is the area from the edge of the stage to the seating area
   - set, flat, prop, lighting unit storage area and workshop - backstage
   - dressing room
   - loading dock
   - patch panel and dinner rack - in right wing
   - control room - (projection booth) contains follow spot, amplification system, pre-set dimmer control - 2nd floor rear auditorium
   - catwalk - ceiling auditorium
   - stage area #1 - downstage center

- stage area #2 - downstage right
- stage area #3 - downstage left
- stage area #4 - upstage center
- stage area #5 - upstage right
- stage area #6 - upstage left

6. Definitions (curtain)

- main curtain - front
- valance - front or main teaser
- brail curtain - main which lift straight up in a pattern
- traveler curtain - opens and closes along its width
- leg - is a sectional curtain which has full height and narrow width
- wing curtain - separates the wing from the stage
- teaser - sectional curtain full width and short height
- scrim - is a see-through mesh
- cyclorama - rear curtain, usually curved around the back of the stage

7. Definitions (fly system)

- bottom - steel bar from which lights, curtains and set materials are hung
- arbor - holds counterweight to balance the material flown
- counterweights - balance the material flown
- "T track" - the arbor rides within it
- adler pulley, headblock pulley, tandem, headblock pulley - operate the arbor

8. Definitions (lighting units)

- footlights - front bottom lighting
- tower lights - high boom - usually from the side
- strip or border lights - gives an overhead general wash
- elypsoidal reflection - is a spotlight
- fresnel - is a flood light with a step lens
- follow spot - follows a talent
- barn doors and iris - limit the light which leaves the lens
- patch panel - patches lights to a dimmer
- dimmer - controls light intensity
- gels and randels - color light

9. Procedure

- the student will select a play to design for (perferably the annual school play choice)
- the student will visit the stage and measure the area
- the student will select a "scale" to work with so that the working drawing produced by the computer will be usable and practical
- the student will boot up the selected software
- the student will draw with the computer the exterior limits of the stage
- this preliminary drawing will be saved so that it may be recalled later for a second floor plan for set design
- the student will recall the drawing from memory and add the lighting bottom, lighting booms and catwalk booms

- the student will select a particular type of light, locate its desired position and place it within the drawing. The shape which is drawn will indicate the light chosen
- create the key at the bottom which will indicate scale, play, scene, and what the lighting unit looks like
- the student will save the final version of the lighting unit scale floor plan
- the student will print out a hard copy of the lighting floor plan
- the student will retrieve the preliminary scale floor plan of the stage area
- the student will decide upon set material props, flats, constructions for a particular scene from a play
- the student will place the element chosen within the floor plan (as a bird's eye view) in the scale chosen so that the space will be accurately displayed
- the student will use a sense of spacial composition so that the set will be beautiful to look at, structurally sound with various entrances and exits so that the play can be blocked in an interesting way
- the student will double check the scale so that the design work may continue to the next step which will be wall elevations of flats as constructed or sequential walls, as well as orthographic drawings of constructions. These drawings will be necessary as working drawings for cost estimation, purchasing of materials and construction
- create a key at the bottom with scale, scene, play etc.
- the student will save the set design floor plan on disk so that it may be used later for the wall elevation drawings and set construction orthographic drawings
- the student will print a hard copy of the completed floor plan
- the estimated time for completion of these two floor plans will be approximately 6-8 class periods

Summary:

1. The student will use computer generated graphics to enhance the concepts of architecture discussed on pages 132 to 135 of the "Introductory Art in the High School" curriculum guide of the Board of Education of the City of New York. The student will create a scale wall elevation of one of areas of the floor plan of a scene of a play created within a prior lesson.

## *TOPIC 150: Creating an Architectural Wall Elevation Set Design for the Stage*

Performance Objectives: Students will be able to:

- demonstrate a knowledge of scale
- create a wall elevation of a flat or construction based upon a floor plan set design
- estimate materials needed for construction and painting based upon the completed wall elevation computer drawing
- estimate costs of materials based upon the scale wall elevation

Aim: The student will select a part of the set floor plan, and create a scaled wall elevation of that particular section. The section chosen may be flat or partially three-dimensional.

Materials:

- IBM PC
- disk drive and floppy disk
- video monitor
- printer
- software (Delta Draw, PC paintbrush, Auto Cad)
- device for utilizing software (keyboard, mouse, digitizing tablet or Koala pad, light pen)
- sketching materials

Motivation:

1. Show photographs of prior sets.

2. Show wall elevations of prior sets.

3. Bring student to the stage to see some of the elevations first hand. They will get a much better feel for the size of some of these items.

Development:

1. Why is it necessary to create scaled wall elevation drawings?

2. How can you translate a floor plan into a wall elevation?

3. What items are in a wall elevation?

4. Procedure:
   a) the student will select a segment of a floor plan to create a wall elevation
   b) the student will research the time period, scene, architectural interior or exterior, countryside etc.
   c) the student will create a thumbnail sketch for the wall elevation selected
   d) the student will boot up the selected software

e) the student will begin to draw with the computer the wall elevation selected. If the elevation is a painted flat, the student will first draw in scale the materials needed to construct it; with an enlarged detail of any complex section showing nail or screw patterns etc.
f) the elevation will contain structure, visual imagery, and color application
g) the exterior size of the wall elevation should conform to the limits of an opaque projection so that it may later be projected on stage for enlargement and transferred to its final working surface
h) the student will save the working drawing for future use
i) the student will retrieve the working drawing and continue to work on it, adding or subtracting elements until it is accurate in scale and complete in design and structure
j) the student will save the final version of the wall elevation
k) the student will retrieve and print out hard copy of the completed wall elevations
l) the student will estimate the material needed to construct and paint the wall elevation
m) the student will estimate the total cost of the materials needed
n) if the project is to be an actual set construction, and the design and cost analysis have been okayed by the stage manager and the cost is within the budget allocation, then the items needed should be ordered. The wall elevation, at this point, will be used as a working drawing for final construction and painting
o) the estimated time for completion of the wall elevation drawing material and cost analysis will be approximately six to eight class periods
p) the student will design based upon his analysis of the play dealing with the following:
   . content
   . intent
   . style
q) the design of the play should be based upon the following:
   . analysis
   . synopsis - scene by scene
   . mood
   . location
   . time period
   . budget
r) the student will design her wall elevation as one of the following types of sets:
   . realism
   . stylization including painted, caricature, anti-illusionary, surrealistic, fragmentary, suggested, unit setting, and projected scenery
s) the students should use the following principles of design and composition when creating their wall elevations and light designs:
   . harmony - sort objects into groups which have some sequential relationships or continuity. (repetition of line, shape, position, measure, color)
   . contrast - to help create form
   . variation - to avoid monotomy
   . pattern composition - injection of variation with established rhythm as the variation repeats itself

- gradation - sharp contrast can be reduced by using a sequence gradation
- composition and unity is dependent upon balance and movement
- line and composition - static/dynamic
- center of interest - organize around a focal point

Summary:

1. The student will use computer generated graphics to enhance the concepts of architecture discussed on pages 132 to 135 of the "Introductory Art in the High School" curriculum guide of the Board of Education of the City of New York. The student will create a scaled wall elevation of one of the areas of the floor plan of a scene of a play created within a prior lesson.

Assignment:

1. Draw a thumbnail sketch of a wall elevation which you would like to render with the computer.

2. Find and bring into class architectural wall elevations and/or photographs of stage sets. Analyze them for style and technique.

## TOPIC 151: Creating Architectural Orthographic Drawings for Three-Dimensional Stage Construction

Performance Objectives: Students will be able to:

- demonstrate a knowledge of orthographic drawings
- translate a sketch into a properly scaled orthographic drawing
- design a three-dimensional stage construction
- read and analyze an orthographic drawing
- do a materials and cost analysis of these orthographic drawing

Aim:

1. The student will design and create an orthographic drawing in scale of a three-dimensional stage construction for a scene from a play.
2. The student will do a materials analysis.
3. The student will do a cost analysis.

Materials:

- IBM PC
- disk drive and floppy disk
- video monitor
- printer
- software - (Autocad is preferrable because it is programmed to do technical orthographic lines) Delta Draw, PC paintbrush
- device for using the selected software (keyboard, mouse, digitizing tablet or Koala pad, light pen)

Motivation:

1. Show the students orthographic drawings of stage constructions (e.g., Tevya's cart from "Fiddler on the Roof", Tevya's house, the car construction from "Grease," the triptych flat construction used in "Grease" etc.).

2. Show the student the actual construction as well whenever possible.

3. Allow the students to compare the scaled orthographic drawings with the actual constructions.

Development:

1. What is the purpose of an orthographic drawing?

2. How does an orthographic drawing relate to the actual three-dimensional construction?

Procedure:

a) the student will select a three-dimensional construction from a particular scene of a play and design it
b) the student will first sketch the object which will be designed

c) the student will now select a scale to work in (e.g., 1/4" = 1')

d) orthographic drawing:
   . verticals and horizontals maintain 90 degrees
   . lines which go back in space maintain a 30 degree angle so that this scale measurement will not vary with perspective
e) the student will boot up the selected software
f) the student will start by drawing the closest front side of the object in the lower left hand side of the screen
g) the student will proceed to draw the 30 degree slanted lines which go off into the distance (towards the right hand side of the screen)
h) the student will save the working orthographic drawing daily until it is complete
i) the student will create a key at the bottom which will contain the scale, object name, scene and play
j) the student will continue to work upon the orthographic drawing until it is complete
k) the student will save the final version of the orthographic drawing on a disk
l) the student will print out hard copy of the final version of the drawing
m) the student will analyze the drawing and make a determination as to the type and quantity of materials necessary to construct it
n) the student will analyze the drawing and make a determination as to the cost of the materials necessary to construct it
o) the student should be able to put a ruler on the orthographic drawing and determine the size of all parts of the object according to the scale used
p) Demonstration:
   . the teacher will draw a single cube as an orthographic drawing
q) the estimated time for the completion of the orthographic drawing and the materials and cost analysis will be approximately five to six class periods

Summary:

1. The student will use computer graphics to enhance the concept of architecture discussed on pages 132 to 135 of the "Introductory Art in the High School" curriculum guide of the Board of Education of the City of New York.

2. The student will design and create an orthographic drawing in scale of a three-dimensional stage construction for a scene from a play.

3. The student will also complete materials and cost analysis.

Assignment:

1. Select an object or major prop from a play which you would like to design and create a thumbnail sketch of it.
2. Estimate the possible size of the three-dimensional object in question.
3. Estimate the sizes of the various parts of the object.
4. Select a scale for the orthographic drawing.
5. Estimate the scale sizes of the corresponding parts of the three-dimensional construction.

# FASHION DESIGN

## *TOPIC 152: Designing an "Iron-on" for a T-Shirt (Fashion Design)*

SubTopic: Designing an image, using the IBM computer and "Delta Draw", suitable for transfer to a T-shirt.

Performance Objectives: Students will be able to:

- design an image in contour line that relates to T-shirt theme
- use "Delta Draw" to draw in the following modes:
  - drawing
  - command repetitions
  - modified drawing commands
  - editing
- save on data disk

Aim: How can you design an image for a T-shirt using the computer?

Materials:

- "Delta Draw" program
- IBM PC computer
- previous student work
- examples of professional work

Motivation:

What original design can you think of for a T-shirt that you would wear?

Development:

1. Review the T-shirt design homework assignment.
   a) discuss the relationship of theme to design
   - evaluate composition
   - use of line
   - use of shapes

   b) discuss how the design may be drawn on the computer
   c) teacher demonstrates how "Delta Draw" drawing program is used to draw a contour line T-shirt design
   d) boot up "Delta Draw" in the A drive
   e) place student's data disk in the B drive
   f) using the "Delta Draw" program demonstrate:
   - drawing
   - command repetitions
   - modified drawing commands
   - editing
   - saving on data disk

   g) give the class the studio assignment

Apperceptive Base:

1. Students received the following homework assignment in preparation for this lesson in designing an image for a T-shirt.

2. Using a black and white medium design an image suitable for a T-shirt

design.

3. Indicate your ability to create a contour line design that will:
    a) relate to theme
    b) relate to the size and shape of a T-shirt
    c) accept added
    . fabric paint color
    . studs/rhinestones
    . applique fabrics
    d) illustrate a theme
    e) include:
    . balance
    . relating shapes
    . variety of line
    f) relate to the drawing capabilities of the "Delta Draw" program

Application:

1. Studio assignment.

2. Create a image suitable for a T-shirt design on the computer. Save your design on your data disk.

3. Class begins to work.

Medial Summary:

Review two or three contour line drawings on the computer. Discuss with the class in terms of previously noted instructional objectives.

Continued Application:

1. Students continue to design T-shirt contour image. As the teacher circulates around the lab the instructional objective should continue to be reinforced.

2. The class must be encouraged to save continously.

Final Summary:

Select four or five T-shirt images. Discuss the following:
- relationship of design to theme
- composition
- use of line
- use of shapes
- creative use of computer

Homework Assignment:

1. Using the completed contour line T-shirt image, indicate the addition of the following:
    a) studs
    b) rhinestones
    c) fabric applique
    d) magic marker

2. Indicate your ability to do the following:
   - a) decorate the image to reinforce the theme
   - b) relate the fabric to the design of:
     - . shapes
     - . line
     - . theme

3. Use color of image markers to relate to the theme of the image.

**References**:

. "Delta Draw" drawing program
. "Introductory Art in High Schools"

## TOPIC 153: Designing an "Iron-on" for a T-Shirt (Fashion Design)

SubTopic: Printing an image for a T-shirt design and iron transfer design to T-shirt.

Performance Objectives: Students will be able to:

- save a T-shirt design on a data disk
- print out a T-shirt design using a "hot iron transfer ribbon"
- iron image onto T-shirt
- add studs
- add rhinestones
- add magic marker colors
- add fabric applique with fabric glue

Aim: How can you print an iron-on design using the computer printer?

Materials:

- "Delta Draw" program
- IBM PC computer
- computer printer
- hot iron transfer ribbon
- T-shirt
- iron
- studs, rhinestones, color markers, fabric, fabric glue

Motivation:

How can you reinforce a contour line T-shirt image with studs, rhinestones, fabric and magic markers?

Development:

1. Review the T-shirt applique homework assignment.
    a) discuss the relationship of theme to design

2. Evaluate use of studs, rhinestones, fabric to theme of design.

3. Evaluate use of color magic markers to design.
    a) discuss how design may be transferred from disk to print out
    b) discuss how printout can be transferred to T-shirt
    c) discuss how applique materials may be added to T-shirt

4. Teacher demonstration of the following:
    a) print image from data disk using hot iron transfer ribbon
    b) transfer image from printout to T-shirt
    c) add appliques
    d) add color marker color

5. Give the class the studio assignment.

Apperceptive Base:

1. Students received the following homework assignment in preparation for this lesson in transferring a T-shirt image.

2. Using the completed, contour line T-shirt image, indicate the addition of the following:
   a) studs
   b) rhinestones
   c) fabric applique
   d) color markers

3. Indicate your ability to do the following:
   a) decorate the image to reinforce the theme
   b) relate the fabric to the design of:
   . shapes
   . line
   . theme
   c) use of color markers to relate to the theme of image

Application:

1. Studio assignment.

2. Transfer the T-shirt image from the data disk to a print out-to the T-shirt. Add appliques and color.

Medial Summary:

Review two or three T-shirt designs in progress. Discuss with the class in terms of previously noted instructional objectives.

Continued Application:

Students continue the process of transferring the image from data disk to T-shirt and the addition of applique. As the teacher circulates around the lab, the instructional objectives should continue to be reinforced.

Note: This process may require more than one studio period to complete.

Final Summary:

1. Select four or five T-shirt designs.

2. Design the following:
   a) relationship of studs and rhinestones to theme of design
   b) discuss relationship of fabric to theme of design
   c) evaluate use of color on T-shirt image to theme of design

References:

. "Delta Draw" drawing program
. "Introductory Art in the High Schools"

## TOPIC 154: Creating a Textile Pattern

**Performance Objectives**: Students will be able to:

- identify various textile designs
- create a single design pattern
- understand and identify vocabulary pertaining to textiles.

**Aim**: To create a textile motif

**Materials**:

IBM computer
drawing software
various textile swatches

**Motivation**:

Review slides of fabric and patterns
visit the sewing room, feel and look at fabrics

1. In what ways is working with a fabric such as silk different than denim, for example?

2. How does the design and color of a fabric affect the user?

**Development**:

(this may be pre-planned)

Select several students to "model" their outfits, ask each to say a few words about their outfit, why they chose it, how it makes them feel, what the color does for them.

1. What do you look for in material design in your clothes? When looking at fabric designs - do certain designs make you think of particular cultures or nations? Which ones - what group?

**Using the Computer**

Design a basic motif that could be reproduced on fabric (keep in mind the types of designs we've looked at - tie-dye, stripe, batik, plaid, etc.)

**Summary**:

What generalizations can we make about the emotional and sociological effects of textile designs?

Application:

Designs can be printed onto fabric in many ways. We will explore several printing methods which can be used on paper or fabric. Let's explore transferring our design onto fabric

1. What are some methods we can use to put our design onto fabric?
2. Now that we have a unit or single motif, what can we do to enhance the design or overall fabric?

Assignment:

For homework, become familar with the terminology used in the fashion/fabric industry. Look up and record the definition of the following: calico, broadcloth silk, moire pleat, tie dye, batik, butt join seam motif, foulard. straight grain, bias.

## *TOPIC 155: Creating a Repeat Pattern*

Performance Objectives: Students will be able to:

- use a pre-designed motif in several established patterns
- understand and execute the three (3) main methods of design repetition
- see and use the negative space created by their designs

Aim: To use a pre-designed motif to create a repeat design.

Materials:

IBM computer
software for drawing
motif from previous lesson (students to provide)

Motivation:

Review the elements and principles of design as seen in various textile patterns. Some patterns you may show are:

| | |
|---|---|
| Egyptian: | lotus, hieroglyphs and serpents |
| African: | tortoise, lizard, and lightning |
| Japan: | bamboo, waves, florals and clouds |
| American/Eur: | florals, geometrics, paisleys, plaids, borders, and jaquards |

Development:

Using the materials from the motivation and your design, follow the sequence listed to create designs.

1. Place on blackboard: BLOCK BRICK HALFDROP DIAMOND OGEE these represent several ways we can use to repeat a pattern.

2. What is meant by each of these? (students may sketch on board, verbally explain, or work on personal pads. Teacher's choice may depend upon extent of classwork done before, type of class etc.)

Using the Computer

1. Take your original motif and one of the repeats to create an overall pattern.

2. Experiment with cut and paste, or edit function. Shrink and grow etc. to vary your design.

Part II

1. What role does repetition play in designs? To create a rhythmic flow in our deigns we must select the appropriate method of placement on the fabric.

2. How do these patterns change? (prepare a simple motif and several demos showing types of repeats and repetition)

   - Butt Joint: units in straight line, arrange in rows.

   - Dovetail: section of one unit interlocks without touching the previous unit; to form a pattern.

   - Overlapping: units touch to create an overall design and continuous shape.

**Summary**:

1. What have we learned about repeat patterns?

2. Name some familiar items (other than clothes) that use repeat patterns?

3. What is the role of the negative space in overlapped designs? - in brick patterning? - butt joining?

**Application**:

Review several magazines and newspapers and collect various interesting patterns. Bring in several examples of repeat patterns or fabric swatches. Identify the type of pattern and type of repeat used.

**Assignment**:

Using one of your found patterns, take the one you dislike the most. Alter that design by changing it in various ways to create a new design.

1. How can we change an existing design? (alter: size, color, direction, pattern repeat)

2. Use the computer to work this idea out, then print new design - keep original piece with new version.

## *TOPIC 156: Creating a Catalogue of Design Silhouettes*

Performance Objective: Students will be able to:

- Develop style lines within the silhouette to show shape.
- Identify and use various types of silhouettes within garments

Aim: To work with and understand the elements of design when applied to fashion design

Materials:

IBM computer
drawing software - "Dr. Halo"

Motivation:

A group trip to The Metropolitan Museum Costume Institute, or slides from there. A visiting lecturer from FIT or a fashion school would be appropriate.

Development:

Using the materials from the previous lesson review the following points:

1. Style lines: the lines of a garment created by seams, darts, necklines, horizontal and vertical lines.

2. Silhouette: the overall look of the garment, including collars, sleeves and skirts.

3. Name some styles we are familar with? (select visual examples) from homework brought in by students and show) ...

   These are referred to as silhouettes

   a. Princess

   b. Tent

   c. A-Line

   d. Blousen

   e. Empire

   f. Shirtwaist

Once the designer has selected a silhouette, he/she must add the finishing touches that make the design work. These "touches" include collars, sleeves and skirts.

4. Name five collar types.

   a. Sailor b. Man-tailored

   c. Cowl d. Peter Pan e. Mandarin

5. Are sleeves important to the "look" of a garment?
   Name some types of sleeves.

   a. Cap b. Dolman c. Raglan

   d. Butterfly

6. Lastly we have skirts and slacks. Name some types of skirts.

   a. Pleated b. Flair c. A-Line d. Sheath

7. Name some types of slacks.

   a. Bell-bottom b. Stirrup c. Pleated

8. Do you agree or disagree with this statement, defend your position. "Clothing styles never really change. The basics of design are the same now as they were before."

### Using the Computer

Draw and save a catalogue of design silhouettes. Create a file of collars, sleeves, skirts, slacks etc. Using these as a basis for beginning, create some original designs in the category you selected to work in.

### Summary:

1. In general what elements make up fashion designing? (line, shape, color texture)

2. What word describes a good practical design? (functional)

### Assignment:

Write a paragraph to answer the following question:

1. What do we mean when we say a designer can trace the evolution of a current trend back to its origins? Think of a current (or nearly current) trend in fashion that can be traced back into another era? (camouflage/military look, circle skirts/bobby sox). Describe a brief history of the style from research you have done in the library.

## *TOPIC 157: How to Redesign a Garment*

Peformance Objectives: Students will be able to:

- describe the demands of the public in relation to style
- discuss and work with the concept of "Form Follows Function"

Aim: To begin designing clothing, with an eye to function and consumer.

Materials:

IBM PC computer
drawing software - "Dr. Halo"

Motivation:

Show series of slides of various people in different styles of dress (these may be from clothing museum collection or from personal library). If it is possible, show examples of inappropiate dress. For example, any business person not in suit, with polo shirt and sneakers going into office, etc.

Development:

In our slides there were several people you saw who were inappropriately dressed for the situation they were in; others seemed just right. When a person's clothing looks correct, appears to fall or drape well on the body and is appropriate for the situation, it has a name.

1. Can someone tell us what the technical name is? (Form Follows Function)
2. What is the definition of Form Follows Function? (the idea that the overall shape and structure of a garment must relate to the body type and use of that garment, and that it be appropriate for the situation it is intended to be used in).
3. From the slides we looked at, list some of the areas you saw that made some of the clothes seem inappropriate (too tight waist, too tight sleeve, binding armhole, too short, too long, etc.).

Application:

Select any area of design you want to continue working in. Some areas you may select include sportswear, casual ware, swim/beach ware, coats and suits, leisure ware, maternity or evening ware. Include men, women and children where applicable.

> Redesign one outfit from our slides making all the needed corrections and alterations you feel are necessary. Indicate which slide you are working from.

Collect examples of clothing from magazines newspapers etc. File and save for future use.

### Assignment

Using one of your pictures from your picture file take a small board and:

1. Paste your original on the board as is.
2. Make several tracings and show:
   a. lines
   b. shape
   c. center of interest
   d. proportion

Paste these onto board and identify.

## TOPIC 158: Designing a Costume

**Performance Objectives**: Students will be able to:

- create a design for a particular event
- select appropriate materials for each
- design with a particular body-type in mind
- discuss and revise designs as needed

**Aim**: To create a fashion for a particular event

**Materials**:

IBM computer
illustration software

**Motivation**:

Students will:

1. Attend rehersal for school production (play).
2. Read copies of the play
3. Walk through the play themselves to get the "feel" of it.

Discussion on design for purpose:

1. Types of costume needed.
2. Actor's body shape.
3. Staging needs - effects of lights, props etc.

Each student will be assigned a character, role, and scene to work with.

**Development**:

Students will meet the actor and, using their knowledge from previous classes, begin to draw/design a costume for their assigned character.

1. What are some things we should consider as we begin to design our costumes?
    a. Size of actor.
    b. The character's role - age, movements.
    c. Locale or setting of the scene.
    d. Area of mobility.

2. Why would the size of the actor be important? (design must suit the build of the actor as well as the role).

3. In what ways can the designer's assist the actor to achieve age, physical limitations, etc? (by using age, appropriate colors, styles and adding pads, tucks or stiffeners)

4. Describe how the locale of the play affects the designer's choices?

5. What is meant by the actor's area of movement? (the stage, backstage, dressing room, props, stairs, doorways etc.) Remember that the actors should be unencumbered. Their movements should be natural, not forced. They must be able to walk, to see, and move their arms and heads.

Computer

Using the materials you've collected, knowledge of the play and your fashion ideas, make several idea sketches for costume designs. Make at least three sketches. Save on disk and print.

Summary:

1. What are some of the things the fashion designer must take into account when designing for an actor?

   a. Using your print-outs, make notations on each:

      . identify role and scene

      . actor's name

      . suggested fabrics

      . colors

   Locate fabric swatches and colors, attach to design.

   b. Can the actor move about freely?

   c. Do you see any potentially dangerous areas in your design?

   d. Is there any reason the costume does not suit the actor, role or locale?

Assignment:

Show your designs to the cast. Discuss selections, changes and effects of lights on materials and colors. Take approved designs to Home Ec. sewing to complete design manufacture.

## *TOPIC 159: Computerized Quiltmaking*

Performance Objectives: Students will be able to:

- . the student will create a computer generated motif design which is based upon a central theme
- . the student will work separately with the understanding that all graphic designs will be joined and displayed as one
- . the student will design the total space within his block of space (8" x 8") so that positive and negative space will be balanced.

Aim:

1. The student will create a motif or graphic design within an 8" x 8" space based upon the central theme of "happiness and city life."

2. The student may use blue and redviolet and white within a high contrast format of solid graphic shapes highlighted with white and black line. Shapes should be designed by abstracting from observation.

Motivation:

1. Show reproductions of group process textile design.

2. Show reproductions of theme quilts.

3. Show Orwish Quilts etc.

Development:

1. What do you as the artist have to keep in mind while designing around a central theme.

2. How can you design the total space within the 8" x 8" space allotted.

3. The student will select an image to design which will hold to the central theme.

   Procedure:

   a) the student will create a thumbnail sketch which will force the image chosen to take on a design within an 8" x 8" space where all spaces become active shapes within the allotted area.
   b) the student will boot up the selected software
   c) the student will use the Koala pad to translate the initial sketch into computer language and store onto disk or will use the keyboard or mouse to draw with the computer
   d) the student will draw a forty-five degree right slanted border line completely around the 8" x 8" area. It will be 1/8 inches long and spaced 1/4 inches apart. This line will simulate a border stitch which will appear to join each student design into a large quiltlike pattern.
   e) the student will save the completed computer design
   f) the student will print out a hard copy of the completed design

g) a student in class committee will begin to make a determination as to which design will be placed next to another.
h) all designs will be cut at the border stitch line
i) the student will assemble all of the designs, putting the border stitch line on all sides. The result will appear to be a computer generated patchwork quilt
j) the final presentation of the completed assignment will be made as one assembled patchwork quilt
k) the estimated time for designing the individual piece and assembling the patchwork quilt as a unit will be approximately 4 to 5 class periods

Summary:

The student will use computer generated graphics to enhance the concepts of the craft of quiltmaking discussed on pages 57 and 58 of the "Introductory Art in the High School" curriculum guide of the Board of Education of the City of New York. The student will create a motif or graphic design within an 8" x 8" space based upon a central theme of "happiness and city life." All student designs will be assembled and displayed together as one computerized patchwork quilt.

Assignment:

1. Using the central theme projected, create a design where you select a particular image from observation.

2. Simplify the image, and create a thumbnail sketch which will become a well designed symbol of the imagery selected.

3. Try to make a determination as to the reasons for selecting how the individual designs will be assembled.

## TOPIC 160: Designing Jewelry

Performance Objectives: The students will be able to:

- create a design suitable for a piece of jewelry
- create a design that relates to the fabrication process of the jewelry material
- draw the jewelry design in contour line
- save the design on a data disk
- print the design from the data disk

Aim: How can you design a pattern for a piece of jewelry using "Dr. Halo" drawing program and the IBM computer?

Materials:

- "Dr. Halo" drawing program
- IBM computer
- printer

Motivation:

Describe how the computer can assist you in designing a piece of jewelry.

Development:

1. Review the jewelry design completed for homework.

2. Discuss the relationship of the jewelry design to the capabilities of the computer drawing modes.

3. Evaluate the jewelry designs in relationship to:
   a) whether the jewelry piece can be fabricated out of the selected material
   b) interest of design
   c) balance of design
   d) design of negative and positive areas

4. Evaluate past student work.

5. Discuss work of professional jewelry designers.

6. Demonstrate how "Dr. Halo" drawing programs may be used to draw a pattern in contour line for a piece of jewelry:
   a) boot up "Dr. Halo" in the A drive
   b) place the joystick or tablet cable into the game port
   c) place the student's data disk into the B drive
   d) demonstrate the various choices of drawing modes that will create a pattern for a piece of jewelry in contour line
   e) demonstrate how to edit the drawing
   g) demonstrate how to print the program

7. Give the class the studio assignment.

**Application**:

1. Studio assignment.

2. Design a pattern for a piece of jewelry in contour line using the computer based upon your homework assignment and the class discussion.

3. Indicate your ability to use the elements of good design.

4. Design a pattern that is applicable to the selected material and fabricating process.

5. The class begins to work.

**Medial Summary**:

Review two or three jewelry designs in progress and discuss with the class in terms of the previously stated instructional objectives.

**Continued Application**:

1. Students should continue to create their jewelry patterns, saving the programs and printing the image.

2. As the teacher visits each student at his computer station, the relationship of design to material and fabrication technique must be reinforced.

   Note: If the facilities for metal fabrication are limited in the art studio, the jewelry piece may be made out of fabric, paper mache, clay or paper.

**Final Summary**:

1. Select four or five printed jewelry patterns for class evaluation. Discuss the following:
   a) relationship of the jewelry piece to the principles of good design
   b) relationship of the jewelry to the properties of the selected material
   c) relationship of the jewelry piece to the fabrication process

2. Turn off computers, printers and monitors, remove program and data disks, remove cable from joystick or tablets.

**References**:

. "Dr. Halo" drawing programs users handbook
. "Introductory Art in the High School"
. past student work
. examples of professional work

# *TOPIC 161: Flat and Three-Dimensional Shape for Drawing and Designing*

Sub Topic: Shapes as Templates in Craft

Performance Objective: Students will be able to:

- define template
- familiarize themselves with the uses of templates for ceramics, applique, patchwork and quilting
- use combinations of shapes
- experiment to find shapes which will work well in the different craft areas

Aim:

What is a template? What shapes can be used to create a template design? Which crafts can employ the use of a template? Why is the template used for ceramics a single shape? Can the template for quilting applique or patchwork hold a variety of shapes? To enhance, see pgs. 9, 45, & 57 of the NYC high school art curriculum guide.

Materials:

Apple II, II+, IIe, IIc or compatible with 48K bytes, baudville's Blazing Paddles, or Koalaware's Micro-Illustrator. (If 128K is available, student can use Broderbund's Dazzle Draw), DOS 3.3 disk drive, Video Monitor, a Koalapad touch Tablet or some method of moving the cursor, one formatted diskette per student.

Artists - needlecraft and needlework magazines

Motivation:

Teacher asks students to think of creating a set of eight ceramic cups using the slab technique. The students in the class are asked to design the contour shape of the sides of the cups and to draw the design shape eight times making each one exactly alike. Then ask the students to stop and challenge the students to think of an easier way to do this.

Procedure:

1. Prod the students to think of the middle step of creating a template.

2. What you seem to be talking about is called a template. Can anyone define template for the class? (a template is a device which will simplify making a single shape or repeating the creating of many of the same shape) A template can be made out of cardboard or any stiff paper or plastic.

3. What does it do? (it serves as a guide to create the same shape, such as a mold or a pattern in many different craft areas)

4. What should one consider when designing a shape for a template? (we should consider the material in which we are working if we are working in a crude material such as clay, we can undertake very difficult and intricate shapes using the template. We would not, however, create a long shape which could easily break off.

5. We should consider the desired effect of the overall design. We could use a very simple shape and produce a very successful quilt because the repetition will also create a tessellating pattern.

6. We should consider the pattern and whether the shape will be repeated on the same piece or used separately on different pieces.

7. Should the ceramic cup be very simple? We could use a simple piece of cardboard and design on the computer screen various curves we could use to create the side contour of the cup.

8. Let's try the computer to create various designs. We will then be able to trace off the screen and cut the cardboard to the desired shape. Open the disk drive door. Hold the diskette with the label end facing you.

9. Insert the diskette with the label facing up into the disk drive and close the door. Now, turn on the monitor and turn on the computer. follow the directions on the screen using the keys on the keyboard and palette or main menu will appear on the screen.

10. For this lesson, we will limit the menu to these commands; "DRAW" 'BOX' and "FILL". Set the "BRUSH" command for small dot.

11. Let's begin with "BOX". Place the stylus on the Koala pad and place the cursor on the screen to "BOX". With your other hand, press the top left button of the Koala pad.

12. The screen will become a blank page ready for you to draw. Now, press the stylus onto the pad and see the cursor appear on the blank screen. The cursor indicates the corner of the box.

13. Press the top left button of the pad to set the corner of the box in the proper place. Now move the stylus in a direction and pull the box open. When the box is the desired shape, again press the top left button of the pad and the shape is set.

14. Draw a moderately small box. This box will represent the basic shape of the cup. Next use the "DRAW" command and create the contour shape the side of the cup could take.

15. It could be a diagonal curve, a wiggling line, or a bulb-like curve. You must evaluate the shape and how it would look as a cup. Ask yourself a few questions - how will I hold the cup, how can I work the colors into the shape of the design, do I want the shape to be conventional or unusual?

16. What shape does the classic cup take? (the classic cup will curve very slightly at the top and quickly curve in to a smaller resolution at the bottom.

Summary:

A template is a guide made out of stiff paper, cardboard or plastic used to create shapes which can be used in crafts such as ceramics, quilting, patchwork and applique. The shape of the template should reflect the desired look of the artwork. Template shapes can be used singularly in several pieces repeated on the same piece or used in combination on the same piece.

Homework/Assignment:

Student is to create the shape of a template which can be used as an applique design to be sewn on 10,000 T-shirts. The shape should reflect a punk look. Student will trace onto paper and cut out of cardboard.

Extra:

Create a recognizable shape, such as a shell or butterfly to be used as a template shape for a quilt. Show the final result when many of these shapes are all sewn together. The student must save the drawings on a formatted data disk. The student is to document the drawing by naming it with student's last name and class, and name drawings "template". If possible, make a print-out of each drawing.

Note: For ERASERHEADS - There are various ways to erase. You can erase the whole screen by touching the pressure sensitive pad with your finger or the stylus to move the cursor to "ERASE" and follow the instructions by choosing the color you wish the screen to turn to. You can erase a single line by changing the color to the background color and (a) try to recreate the line to be erased with a thicker brush or (b) change the command to "BOX" and "black box" the shape out or (c) use a thick dot and dot the line out.

## TOPIC 162: Designing Patterns for Ceramic Tiles

Performance Objectives: Students will be able to:

- create a design suitable for a ceramic tile
- draw a contour line design
- save the design on a data disk
- print the design from the data disk
- transfer the print-out design to the clay tile

Aim: How can you design patterns for ceramic tiles using "Dr. Halo" drawing program and the IBM computer?

Materials:

- "Dr. Halo" drawing program
- IBM PC computer
- printer
- clay tile

Motivation:

Describe how the computer can make designing a tile pattern or image much easier.

Development:

1. Review the tile patterns/images completed for homework.

2. Discuss the relationship of the pattern/image to the capabilities of the computer drawing modes.

3. Evaluate the tile pattern/image in relation to:
   a) interest of design
   b) balance of design
   c) design of shapes

4. Discuss past student work.

5. Evaluate work of professional artists/masters of art:
   a) Matisse
   b) Picasso

6. Demonstrate how "Dr. Halo" drawing program may be used to draw patterns for ceramic tiles. Save the designs on a data disk and print the program.
   a) boot up "Dr. Halo" in the A drive
   b) place the joystick or tablet cable into the game port
   c) place the student's data disk into the B drive
   d) demonstrate the various choices of drawing modes that will create a tile pattern
   e) demonstrate how to edit the drawing
   f) demonstrate how to save the program on the data disk
   g) demonstrate how to print the program

7. Give the class the studio assignment.

Application:

1. Studio assignment.

2. Design a pattern or image based upon your homework assignment and the class discussion:
   a) indicate your ability to use the elements of good design

3. Design a pattern or image that is applicable to a ceramic tile design.

4. The class begins to work.

Apperceptive Base:

1. Students received the following homework assignment in preparation for this computer design lesson.

2. Indicate your ability to do the following:
   a) design a pattern that can be transferred to a clay tile
   b) design in contour line
   c) design related to a theme
   d) size: 6 x 6
   e) color: black on white paper

Medial Summary:

Review two or three tile designs in progress and discuss with the class in terms of the previously stated instructional objectives.

Continued Application:

1. Students should continue to create their tile pattern or image, saving the programs and printing the image. If a student completes a design early, the student should be encouraged to create a second pattern or image.

2. It is assumed that the teacher will use three patterns in the ceramic studio to continue the slab/tile project.

Final Summary:

1. Select four or five printed tile designs for class evaluation. Discuss the following:
   a) relationship of the design to the properties of clay to accept a transfer pattern/image
   b) interest of design
   c) balance of design
   d) design of shapes

2. Turn off computers, printers and monitors, remove program and data disks. Remove cable from joy stick or tablet.

References:

- "Dr. Halo" drawing program users handbook
- "Introductory Art in the High School"
- past students work
- professional artists/masters of art

# TOPIC 163: Flat and Three-Dimensional Shape for Drawing and Designing

Sub Topic: Shape in Crafts

Performance Objective: Student will be able to:

- analyze shapes of different crafts as they apply to the specific craft
- recognize gemstone shapes
- apply symbolic and non-objective shapes in stained glass
- create and transform shapes to create new shapes such as with granny squares and shapes for paper beads
- create designs using shapes appropriate to a particular craft

Aim:

What are some basic gemstone shapes? What shape can a piece of enamel jewelry take? What are the shapes of granny squares - other than square? What types of shapes can be used for stained glass design? What shapes can paper beads be created from? To enhance pgs. 62, 63 & 66 of the NYC High School Art Curriculum Guide.

Materials:

Apple II, II+, IIe, IIc or compatible with 48K bytes, Baudville's Blazing Paddles, or Koalaware's Micro-Illustrator. (If 128K is available, student can use Broderbund's Dazzle Draw), DOS 3.3 disk drive, Video Monitor, a Koalapad Touch Tablet or some method of moving the cursor, one formatted diskette per student

Artist- "Crucifixion", window from St. Remi, Reims, 1190 stained glass
Needlecraft and needlework magazines

Motivation:

What is your impression of arts and craft? What do you think of when someone says that they were doing arts and craft - what is the activity?

Procedure:

1. All students to respond. Find that there is a stereotypical concept of arts and craft connected with camp and campers making lanyard.

2. What is the definition of craft? (craft is the demonstration of skill in any type of handwork; craft is an artful way of doing something skillfully)

3. What are some craft areas to which we can apply the use of shapes? (sewing, lapidary, ceramics, crocheting, enameling, stained glass, paper beads)

4. What type of shapes can we use in craft? (all shapes are appropriate. Symbolic shapes are shapes which specifically resemble something, such as star, fish, balloon, half moon crescent, thunderbolt, heart, tear drop, lips, house. Non-objective shapes are shapes which are expressive and abstract. They might appear to look like something however the resemblance is vague - (like seeing shapes in clouds)

5. How does shape apply to the craft of sewing? (patches for decoration on clothing, pillow shapes)

6. How does shape apply to the lapidary art of gemstone cutting? (there are standard and basic gemstone shapes which are created from raw gemstone materials. Such shapes are rectangle or baguette, round, oval, tear drop, and more exotic shapes are marquise, hexagon, lozenge, trapezoid or trapeze, keystone, kite, half circle, or half moon, pentagon or bullet.

7. How does shape apply to the art of ceramics? (a very successful porcelain maker can be creative in the shapes of plate, trays, ashtrays)

8. How does shape apply to the art of stained glass? (the artist can use both symbolic and recognizable shape in stained glass by piecing together shapes to create a whole image. Shapes can take many unusual forms or can take similar forms to create, for example, a bunch of balloons)

9. How does shape apply to the art of granny squares? (granny square are crocheted squares which are then sewn or crocheted together to create a sweater, blanket, bag or other form. The unit need not be a square; it could be a hexagon, pentagon, octagon, triangle, or any shape which can fit together without gaps in between. Each shape can be designed with inner shapes)

10. How does shape apply to making paper beads? (paper beads are made by cutting small pieces of paper in similar shapes. Each shape is rolled and glued to create the bead shape. One can experiment with different shapes to see the final resulting bead shape)

11. How does shape apply to the art of enameling? (to do enameling, the artist starts with a piece of copper and will prepare the copper for glazing with different colors and shapes. The piece of copper can take any and all shapes as it is cut by the artist with a saw)

12. Let's try the computer to create various designs. We will then be able to trace off the screen and apply your design to the specific craft. Open the disk drive door. Hold the diskette with the label end facing you.

13. Insert the diskette with the label facing up into the disk drive and close the door. Now, turn on the monitor and turn on the computer. Follow the directions on the screen using the keys on the keyboard and the palette or main menu will appear on the screen.

14. For this lesson, we will use the full menu and any commands needed for completing the design problem chosen by the student. Let's begin by placing the stylus on the Koala pad and place the cursor on the screen to the desired command.

15. With the other hand press the top left button of the Koala pad. The screen will become a blank page ready for you to draw on. Now, press the stylus onto the pad and see the cursor appear on the blank screen. The cursor indicates where you will begin to create on the screen.

16. Continue using the Koala pad and software program, working independently on a specific design problem. The student is to explore the use of the computer to answer the design.

Summary:

Shape is a very versatile element to use in many different skill areas of craft. Some craft areas are sewing, applique, patchwork and quilting, lapidary art of gemstone cutting, stained glass enameling, ceramics, paper beading and crocheting. Shapes can be recognizable and symbolic, or unusual and non-objective or abstract.

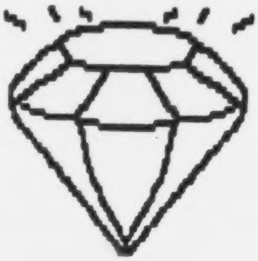
Homework/Assignment:

Student is to use the computer to answer the craft problem and work independently as is necessary to produce the desired answer to the craft design problem.

Extra:

Create a chart of different answers to the design problem chosen by the student and create a computer graphic chart with a proper heading and various ways to answer the problem. The student must save the drawings on a formatted data disk. The student is to document the drawing by naming it with student's last name and class, and name drawings "craft". If possible, make a print-out of each drawing.

Note: For ERASERHEADS - There are various ways to erase. You can erase the whole screen by touching the pressure sensitive pad with your finger or the stylus to move the cursor to "ERASE" and follow the instructions by choosing the color you wish the screen to turn to. You can erase a single line by changing the color to the background color and (a) try to recreate the line to be erased with a thicker brush or (b) change the command to "BOX" and "black box" the shape out or (c) use a thick dot and dot the line out.



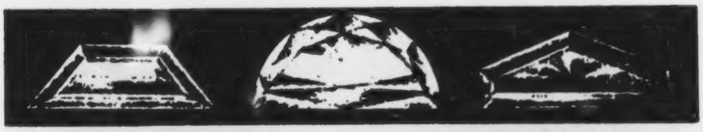


FIG. 174.—Trapeze. FIG. 175.—Half-moon. FIG. 176.—Epaulet.

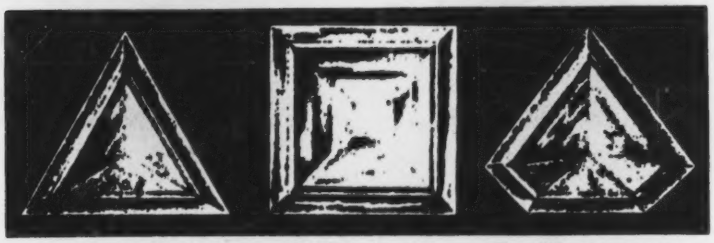


FIG. 177.—Triangle. FIG. 178.—Square. FIG. 179.—Cut-corner triangle.

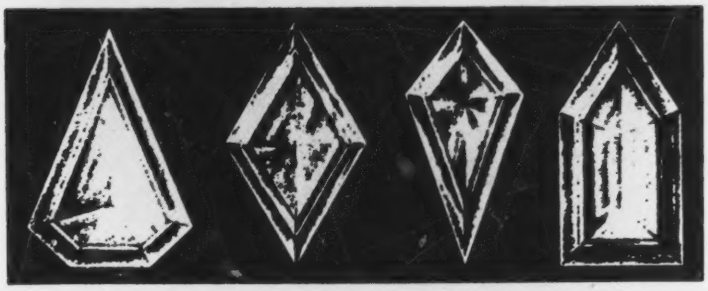


FIG. 180.—Cut-corner triangle. FIG. 181.—Lozenge. FIG. 182.—Kite. FIG. 183.—Pentagon or bullet.

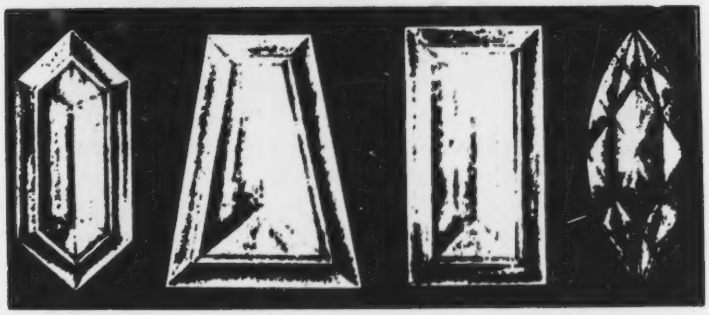


FIG. 184.—Hexagon. FIG. 185.—Keystone. FIG. 186.—Baguette. FIG. 187.—Marquise.

FIGS. 174–187.—Modern diamond cuts. (*Adapted from "The Glorification of the Diamond" by Ansen and Company, Inc., New York City.*)

## TOPIC 164: Designing a Macrame Wallhanging

Performance Objectives: Students will be able to:

- use the computer to design a macrame wallhanging
- gain control of the "custom brush" tool
- apply design principles to designing the wallhanging
- experience how a higher technology can help with a simpler technological process

Aim: How can the computer help us in designing a macrame wallhanging?

Materials:

- 16 IBM PC computers
- 16 Art Studio software disks
- 16 data disks, black and white or color printers

Motivation:

On a demonstration computer, design a "custom brush" in the shape of a square knot. Repeat the brush once.

a) how can we begin to design a macrame wall hanging using this tool
b) what other brushes would we need to make? (a brush for each knot type that they wanted to use)

Development:

1. Insert software disks and turn on computer.

2. At their own computers, have the students draw with "custom brush" and save in brush file, all the macrame knots that they learned.

3. At a demonstration computer, show how to draw with a "knot brush" to form a vertical or horizontal row, or any other of the configurations the knots frequently make.

4. Remind the students that in order to change the size of a knot, they have to make another brush, because the brush always repeats in the same size.

5. Demonstrate how to use the "cut and paste" tool to move entire portions of the design.

6. At their own computer, have the students draw with the "knot brushes "they saved, and begin to design their hanging.

7. Have the students vary their finished designs with "cut and paste" and save to disk all designs and variations.

8. Print designs that they want to work from.

**Summary**:

Once the students gain control of the design commands of the software, they will realize what a valuable tool the computer is for designing projects that will be executed in other media. The fact that the computer lends itself to making and saving variations, will motivate the students to experiment more with their ideas.

**Homework Assignment**:

Draw a macrame design and variation at home with pencil and paper. Compare the process with designing on a computer. Which do you like better? Why?

## *TOPIC 165: Creating Needlecraft Designs*

Performance Objectives: Students will be able to:

- identify Central Asian motifs
- create designs based upon: the triangle, the circle, the star

Aim: To use Central Asian motifs to create designs for needlecrafts.

Materials:

IBM computer
drawing software

Motivation:

Discussion on the people of Central Asia, their lives and history. Slides of motifs using title, embroidery and weaving although these designs appear complex. If you could trace them, you would see that they all are repeats of simple shapes.

1. What shapes have you found?

2. Does this remind you of any other project we worked on?

3. Will someone review the types of repeats we can use?

Development:

Using the worksheets you have, you can see that the most intricate Asian motif is really quite simple to produce.

Using the Computer

Follow as many designs as you like, create one or several of the patterns shown. Lay a grid on the screen.

1. What would be step two in creating an overall motif? (repeat)

2. To gain better control over the design, what menus and functions of the computer can we use to move or enhance our motif? (freeze, shrink, crop, cut/paste etc.)

Using one, several or all options available, begin to create your repeat pattern.

Summary:

Most Central Asian motifs are based on what type of shape? List the shapes you have worked with.

**Application:**

Select a style of needlecraft you would like to work in. Name some types of needlecraft: (latch hook rug, embroidery, needlepoint needle punch, counted cross stitch, crochet)

Print out your design, lay in the type of grid you need.

**Assignment:**

Using your print-out, select material needed, reproduce your design to create a rug or wall hanging, lap robe etc.

# PRINT MAKING

## TOPIC 166: Making a Multi-Color Linoleum Print Composition

SubTopic: Designing a two-dimensional image suitable for a multi-color linoleum print, using the IBM computer and "Delta Draw" program

Performance Objectives: Students will be able to:

- design a contour line composition within the size limits of a linoleum block, suitable for a print
- use "Delta Draw" program to draw the following within the contour line composition:
  - thick and thin lines
  - textures
  - stippling (dots in patterns)
  - borders
  - save on data disk

Aim: How can you use the capabilities of "Delta Draw" to design a two-dimensional image suitable for a multi-color linoleum print?

Materials:

- "Delta Draw" program
- IBM PC computer
- previous student work
- examples of masters of art

Motivation:

What are the advantages of using the computer to design a composition for a block print?

Development:

1. Review the thumbnail sketches of lino-block compositions assigned for homework in preparation for this lesson.
   a) discuss the composition
   b) evaluate the use of shapes
   c) analyze the use of space
   d) discuss how the selected thumbnail composition may be drawn on the computer

2. Demonstrate how "Delta Draw" drawing program is used to draw a contour line composition suitable for a lino-block print.
   a) boot up "Delta Draw" in the A drive
   b) place student's data disk in the B drive
   c) using the "Delta Draw" program demonstrate drawing
      - a two dimensional shape
      - thick and thin lines
      - textures
      - stippling
      - borders/saving programs

3. Give the class the studio assignment.

Apperceptive Base:

1. Students received the following homework assignment in preparation for this lesson in designing an image for a linoleum print.

2. Using a black and white medium draw three thumbnail sketches, 3" x 5", suitable for a linoleum block print.

3. Indicate your ability to draw the following:
   a) a balanced composition
   b) two-dimensional shapes
   c) illustrate form
   d) illustrate space
   e) relate your composition to the drawing capabilities of the "Delta Draw" program

Application:

1. Studio assignment.

2. Select one of the thumbnail sketches and draw to size of your linoleum block in contour line. Save your drawing on your data disk.

3. Class begins to work.

Medial Summary:

Review two or three contour line lino-block designs. Discuss with the class in terms of previously noted instructional objectives.

Continued Application:

1. Students continue to design their lino-block designs. As the teacher circulates around the lab, the instructional objectives should continue to be reintroduced.

2. Students should be encouraged to save continuously.

Final Summary:

Select four or five lino-block designs for class evaluation. Discuss the following:
   a) composition
   b) lines
   c) textures
   d) stippling
   e) borders
   f) use of computer to draw the image

Homework Assignment:

1. Make a full size sketch of your lino-block design. Fill in the colors you plan to use in your composition.

2. Indicate your ability to do the following:
   a) use color to indicate form
   b) use color to show space
   c) use color to indicate contrast of art

References:

- "Delta Draw" drawing program
- "Introductory Art in the High School"
- "Art Through the Ages", Helen Gardner

# *TOPIC 167: Making a Multi-Color Linoleum Print*

SubTopic: Adding multi-colors to a contour line composition suitable for a linoleum block print.

Performance Objectives: Students will be able to:

- bring up from memory a composition saved on a data disk
- add selected colors
- make corrections with "color fills" using the fill mode
- make a computer print-out for each color from the data disk
- print the composition in contour line from a data disk
- transfer the print-out to the linoleum block

Aim: How can you add multi-color to a contour line composition suitable for a bias-black print?

Materials:

- "Delta Draw" program
- IBM PC computer
- computer printer
- previous student work
- examples of masters of art

Motivation:

How does the computer assist the artist in designing color for a block print?

Development:

1. Review the full size color sketches for the lino-block assigned for homework in preparation for this lesson.
   a) discuss how the color:
      - indicates form
      - can show space
      - shows contrast

   b) demonstrate how "Delta Draw" program is used to fill color in a composition.
   c) boot up "Delta Draw" in the A drive
   d) place student's data disk in B drive
   e) demonstrate the following with the computer:
      - fill a complete shape
      - fill a background
      - change colors by adding yellow
      - change color intensity
      - change the color of a line
      - make corrections in color through the fill mode

   f) print lino-block composition in contour line
   g) print each color separately
   h) exhibit previous student work
   i) exhibit masters of art
   j) give class studio assignment

## Application:

1. Studio assignment.

2. Add two or three colors to your contour line composition. Demonstrate your ability to indicate form, space and contrast.

3. Print the contour line lino-block composition.

4. Print each color from the data disk separately.

Note: IBM will print all colors as black. It will be necessary to remove each color after each printout.

5. Tandy 1000 prints colors in a variety of grays. The entire composition may be printed at one time.

6. Class begins to work.

## Medial Summary:

Review two or three color-filled lino-block designs. Discuss with the class in terms of previously stated instructional objectives.

## Continued Application:

1. Students continue to design color filled lino-block composition and make a computer print out for each planned color.

2. The class should be encouraged to save continuously.

## Final Summary:

Select four or five lino-block color compositions with color separations and discuss the following with the class:
a) how does color indicate form?
b) how does color show space?
c) how does color show contrast?
d) how can the color separations be used to create color lino-blocks?

Note: The cutting of this lino-block and the subsequent printing will require additional days of studio activity in an art studio/classroom to complete the project.

## *TOPIC 168: Printmaking*

Topic: Printmaking and the Principle of Repetition

Performance objective: Student will be able to:

> explore the fundamentals of printmaking as described on pages 6 and 30 of the NYC high school art curriculum guide.

Aim:

How can we experiment with an image and a design pattern for a print using the principle of repetition?

Materials:

Apple II, II+, Iie, IIc or compatible with 48K bytes, Baudville's Blazing Paddles. (If 148K is available, student can use Broderbund's Dazzle Draw), DOS 3.3 disk drive, Video Monitor, a Koalapad touch Tablet or some method of moving the cursor, one formatted diskette per student or every three students

Motivation:

Ask the students their feelings about being able to see many different answers to the question of how their final prints should look, before they actually do create their print.

Procedure:

By the end of the session the students will have been able to see many different answers to their print design, and can choose their favorite combinations of repetition patterns.

1. What is the principle we are using as our dominant force? (the principle of repetition.)

    a. These patterns are checkboard, diagonal, spiral, reverse, half-drop.)

2. How can we create various types of patterns with the computer? Open the disk drive door. Hold the diskette with the label end facing you. Insert the diskette with the label facing up into the disk drive and close the door. Now, turn on the monitor and turn on the computer.

3. Follow the directions on the screen using the keys on the keyboard and the palette or main menu will appear on the screen. For this lesson, we will use as much of the menu as needed to create the image to be repeated. Then we will be using the "WINDOW" command.

4. Let's begin. Create your image to be repeated. Your palette is on the screen. Press the stylus on the pad to the desired command as well as "COLOR" and "BRUSH", always pressing the top left button on the pad to set your choices. The blank drawing screen will appear and you may now begin to create the image.

5. You may change your choice of commands at any time. The image that is to be created must be one-quarter of the area of the screen or less in order to be able to use the "WINDOW" command.

6. Draw the image toward one corner of the screen. To repeat the image four (or perhaps more) times as will be done using the printmaking process, remember to make the image the appropriate size. The image can be large or small, but must be proportional to the number of times the image will be repeated.

7. A large image (1/4 the size of the screen) will not be repeated many times. The special arrangement must not create a clutter. The image should also maintain its own dignity, without getting lost. A small image can be placed in a checkerboard arrangement, a diagonal design, spiral, etc.

8. Now that you have the image, press the button to the palette or menu. Direct the cursor to "WINDOW" command and press top button. The "CUT" and "PASTE" options will appear. Move cursor to "CUT" and press top button.

9. Then move the cursor to one corner of the image or area you want to repeat and press the button on the Koala pad. A blinking box will outline the area which can be made into any size window by directing the stylus on the pad. When the box surrounds the image or area you want to repeat, press the button and you have created a window.

10. The window is in memory. The machine automatically switches to the "PASTE" command. The image can now be repeated anywhere on the screen as directed by a little pointing finger appearing on the screen. Direct the pointing finger with your stylus on the pad.

11. When the finger is where the image is to be repeated, press the top left button. The image will appear. The image can be repeated anywhere on the screen.

12. Practice repeating the image. Remember, the image must be saved in order to use again. Try many arrangements.

Summary:

Printmaking is a process of applying an inked image onto paper or fabric by means of an intermediate surface called a plate. In order to design an image for use in printmaking, an important principle of design, repetition, can be employed. When using a stamping method, there are various possible placements, such as checkerboard, diagonal, spiral, reverse, and half-drop.

Homework/Assignment:

To create a pattern using a single image which is suitable for use in the printmaking room. The student is to explore various possibilities. The student must save the pattern on a formatted data disk. The student is to document the work by naming it with student's last name and class, and assignment name "repetition". If possible, make a print-out of the work.

Note: For ERASERHEADS - There are various ways to erase. You can erase the whole screen by touching the pressure sensitive pad with your finger or the stylus to move the cursor to "ERASE" and follow the instructions by choosing the color you wish the screen to turn to. You can erase a single line or area by changing the color to the background color and (a) try to recreate the line or area to be erased with a thicker brush or (b) change the command to "BOX" and "black box" the line or area out.

# APPENDIX

# Categorical Glossary of Computer Technological Terms

## MEMORY

| | |
|---|---|
| BIT | The smallest unit of information a computer processes. |
| BYTE | A byte is 8 bits long. |
| KILOBYTE | 1024 bytes of information (memory capacity of a computer. |
| MAIN MEMORY | The internal storage device of the computer. |
| MEGABYTE | 1,048,576 bytes of information (notes size of memory. |
| REGISTER | Very fast memory locations found in the central processing unit. |

## LANGUAGE

| | |
|---|---|
| BASIC | A programming language for beginning programmers. |
| COBOL | Common Business Oriented Language. |
| FORTRAN | (Formula Translation) computer language used by scientists. |
| LANGUAGE | A set of words or symbols used to give instruction to a computer. |
| MACHINE LANGUAGE | The only language understood directly by a computer which is composed of binary numbers. Each type of computer has its own machine language. |

## HARDWARE

| | |
|---|---|
| ACOUSTICAL COUPLER | A modem which connects a computer terminal to a telephone handset and changes computer signals to signals that can be sent over a phone line. |
| ANALOG COMPUTER | A computer that works with a continuous scale or measure. |
| CARD PUNCH | A device which punches holes in a card to represent data. |

| | |
|---|---|
| CARD READER | An input device which senses hole patterns in a punch card and translates them into computer data. |
| CENTRAL PROCESSING UNIT (CPU) | The part of the computer that interprets instructions and carries them out. |
| CHIP | A small bit of silicon upon which an integrated circuit is built. |
| ELECTRONIC COMPUTER | A machine that stores and processes information using electrical and magnetic signals. |
| CONTROLLER | A device that moves information between a disk and the main memory so the C.P.U. can use it. |
| DIGITAL COMPUTER | A computer that works with a measure of distinct values. |
| DISK | A flat circular plate with a magnetic surface layer upon which data can be stored. |
| DISKETTE | A secondary storage device with a magnetic surface for reading. |
| DISK DRIVE | A device that plays disks or diskettes. |
| DIRECT CONNECT MODEM | A modem that connects directly to a phone line. |
| FIRST GENERATION COMPUTER | Computers that use vacuum tubes. |
| GRAPHIC DIGITIZER | A graphic input device that changes lines on paper into coordinates that are automatically fed into the computer. |
| GRAPHIC TABLET | A kind of graphic digitizer where a stylus is used to draw on an electronic tablet. |
| GRAPHIC TERMINAL | T.V. monitor. |
| HARDWARE | The physical equipment of a computer. |
| INPUT/OUTPUT DEVICES | Devices which move data into and out of the main memory of a computer. |
| INTEGRATED CIRCUIT | A chip of silicon that performs the same function as transistors, capacitors and resistors. |
| LIGHT PEN | A graphic input device which is light sensitive. |
| LINE PRINTER | A device that prints a line of characters as a unit. |
| MECHANICAL PLATTER | A graphic output device, uses pen to draw on |

| | |
|---|---|
| | paper. |
| MICROCOMPUTER | A computer that has a microprocessor as its C.P.U. |
| MICROPROCESSOR | A tiny silicon chip that is the central processing unit of a computer. |
| MODEM | Changes computer signals into tones that can be carried on telephone lines. |
| ONLINE TERMINAL | A terminal connected to a computer where data may be entered on telephone lines. |
| PERSONAL COMPUTER | Table top computer which has a microprocessor as its central processing unit. |
| PERIPHERAL DEVICES | External devices that can extend a computer's capabilities. |
| PLOTTER | A graphic output device, draws with pen and ink on paper. |
| SECONDARY STORAGE DEVICE | Supplementary, external data storage (disk) |
| SECOND GENERATION COMPUTER | Computers that use transistors, capacitors, and resistors. |
| TAPE DRIVE | Audio tape recorder used to store computer programs and data. |
| TERMINAL | A device with a keyboard and display to send and receive information from a computer. |
| TRANSISTOR | A small semi-conducting device that performs the functions of a vacuum tube. |
| THIRD GENERATION COMPUTERS | Computers that use integrated circuits or silicon chips. |
| VIDEO TERMINAL | A terminal with a T.V. screen. |
| WORD PROCESSOR | A computer used to manipulate written material. |

## PROCESS

| | |
|---|---|
| ACCESS | To get a record. |
| ADDRESS | A number for a location in the computer's memory. |
| ALGORITHM | A procedure for solving a problem. |
| BATCH PROCESSING | Gathering information and entering it into a computer all at once. |

| | |
|---|---|
| BENCHMARK RUN | A test run of a program to judge its performance. |
| BRANCH | To select one of several possible acts of instructions in the execution of a computer program. |
| BUG | An error. |
| CHARACTER | A letter or symbol used to represent data. |
| CODING | A way of shortening data so that it will take fewer memory locations. |
| COMPILER | A program that changes a computer program written in another language such as Fortran or Cobol, into machine language. |
| COMPUTER SCIENCE | The study of theories of computation. |
| DATA | The information that is put into a computer to be processed by a program. |
| DATA PROCESSING | Taking information and changing it into other useful forms. |
| DIGIT | Arabic numerial 0 - 9. |
| DIRECT ACCESS FILES | Files from which records may be taken in any order. |
| EXECUTE | To perform or carry out. |
| FEEDBACK | The use of output from input to make the system self correcting. |
| FILE | A set of related records stored together and treated as a unit. |
| FIELD | A certain area of a record used for a particular piece of data (age, name). |
| FIELD TEST | The testing of a computer program on a small scale to correct errors before it is widely distributed. |
| HARD COPY | A printed copy of machine output. |
| INFORMATION | Organized data used in a computer program. |
| INPUT | Information given to a computer. |
| KEY | The portion of a record used to determine where a record goes in a file. |
| LOOP | A set of instructions that may be executed |

| | |
|---|---|
| | repeatedly while a certain condition exists, |
| MENU | Similar to a table of contents in a book. |
| OPERATING SYSTEM | A program that controls the execution of computer programs. |
| OPERATION | A basic function of a computer (addition, subtraction movement of data). |
| OPERATION CODE | The portion of machine language that tells the computer what operation to perform. |
| OUTPUT | The information generated by a computer. |
| POWER | The speed and storage capacity of a computer. |
| PROCESS | A systematic order of operation to produce a certain result. |
| PROGRAM | The instructions that tell a computer what to do. |
| QUANTIFICATION | The changing of data to measurable quantities. |
| RECORD | A collection of related data treated as a unit (payroll). |
| SEQUENTIAL FILES | A file of information which can only be read record by record. |
| SIMULATION | The development of a model for the purpose of testing a theory. |
| SOFTWARE | Computer programs. |
| SUBROUTINE | A self-contained set of instructions used by a program or another subroutine. |
| SYNTAX ERROR | An error generated by improper input. |
| SYSTEMS ANALYSIS | Procedures for systematic study of the structure of a system to improve it. |
| TIME SHARING | The use of a computer by more than one person at a time. |
| VARIABLE | A part of the program that is changeable. |

## HISTORY

Howard Aiken - Developed the Mark I mechanical computer.

John Atanosoff and Clifford Berry - Experimented with the first electronic computer (used vacuum tubes).

Charles Babbage - Designed a calculating machine called the analytical engine.

Presper Eckert - Developed ENIAC, a first generation computer, with John Mauchly.

Herman Hollerith - Developed a punch card system for the census.

Joseph Marie Jacquard - Used punch cards to control looms.

Gottfried Wilhelm Von Leibnitz - Created an early multiplying and dividing machine.

John Von Neumann - Proposed that computers use the binary number system and stored programs.

Blaise Pascal - Created early adding and subtracting machine.

## CAREERS

Customer Engineer - A technician who makes sure a computer works properly.

Field Service Engineer - A technician who will travel to a company to fix its computer.

Operations Personnel - Personnel who are directly responsible for making the computer usable.

Systems Analyst - One who studies a system and suggests ways to improve the system.

Systems Programmer - One who creates operating system and languages for the computer.

## *Copying Public Domain Diskettes*

Like plays, novels, songs, textbooks, and all other published material, the programs and files on a published computer diskette are fully protected by the copyright laws of the United States. No diskette can legally be copied without the appropriate permission of the publisher. The position of the Office of Technology of the New York City Board of Education on diskette copying is clearly stated in the June, 1986 issue of COMPUTALK:

1. Duplication of copyrighted software or documentation is prohibited.

2. Software publishers must be contacted to verify procedure for backup multiple copies and licensing agreements.

3. A publisher's written permission is required to download or network programs to other microcomputers.

4. No student or Board of Education employee may use school computers to duplicate copyrighted software.

5. The use of illegally duplicated software, however obtained, is prohibited in all Board of Education facilities.

6. Simultaneous use of original software and/or its back-up is not permitted without the written permission of the publisher.

Although the New York City Board of Education does not have computer diskettes under contract at this time, New York City schools can order diskettes through companies that have been awarded New York State Supply contracts. If you wish to purchase additional diskettes, the Office of Technology suggests that you contact:

Kilobytes Incorporated
80 Davids Drive
Hauppauge, N.Y. 11788
(516) 231-1800
contract number P23590

The item number for flexible diskettes size 5 1/4 inches is MD00505. The description is 1 sector (soft sectored, and the price is $5.50 per box of ten.

## Copying Public Domain Diskettes for the Apple IIe and Apple II Plus

To make a copy of your data diskettes or public domain program diskettes, follow these steps:

1. Before proceeding, be sure that the diskette you wish to copy is write protected. Write protecting your diskette will prevent you from accidentally erasing or overwriting any of its programs or files during this or any other use of the diskette. You can write protect a diskette by placing a small piece of opaque tape over the write protect notch on the diskette's left side.

2. Insert the DOS 3.3 System Master diskette into drive 1 and turn the computer and the monitor on. When the Applesoft prompt and cursor appear type in RUN COPYA and press RETURN.

3. The screen will display the message

```
APPLE DISKETTE DUPLICATION PROGRAM
ORIGINAL SLOT:   DEFAULT = 6
```

   Press RETURN.

4. The screen will display

```
ORIGINAL SLOT: 6
       DRIVE:    DEFAULT = 1
```

   Again, press RETURN.

5. The screen will display

```
       DRIVE: 1
```

   and add a new message:

```
DUPLICATE SLOT:  DEFAULT = 6
```

   Press RETURN.

6. The screen will display

```
DUPLICATE SLOT: 6
```

   and ask one last question:

```
       DRIVE:    DEFAULT = 2
```

   If you are using an Apple II Plus or IIe with one disk drive, change the number 2 to 1 and press RETURN. If your machine has two disk drives, simply press RETURN. The screen will display

```
-- Press `RETURN' key to Begin Copy --
```

7A. If you are using a computer with two disk drives, the screen will give you no further instructions. Remove the DOS 3.3 System Master diskette and insert the source diskette into drive 1. (The source diskette is the diskette you want to copy.) Insert the target diskette into drive 2.

(NOTE: It is not necessary to format a new diskette before using it as the target diskette. The Apple II Plus or IIe will format it automatically before copying onto it.)

Press RETURN. Reading and Writing messages will appear alternately as the computer reads the source diskette and writes onto the target diskette. If the target diskette has not been formatted before, the screen will also display Formatting.

7B. If you are using a computer with a single disk drive, press the RETURN key. You will have to alternately insert and remove both the source diskette and the target diskette during the copying procedure. The screen will tell you what to do at the proper times. Follow its instructions carefully. When you insert the target diskette for the first time, the screen will display the word Initializing while it proceeds.

When the screen displays the message

```
DO YOU WISH TO MAKE ANOTHER COPY?
```

the procedure is over; the target diskette has been made into a duplicate of the source diskette.

8. If you want to make another copy of the source diskette, type in Y and press RETURN. The screen will repeat the message

```
-- Press `RETURN' key to Begin Copy --
```

You can repeat this procedure as many times as necessary and make as many copies of your original data or public domain program diskettes, as you need.

# *Copying Public Domain Diskettes for IBM/Tandy*

## Diskcopy with One Disk Drive

To make a copy of a data diskette or public domain program diskette on an IBM PC, PCjr, or IBM compatible Tandy computer with a single disk drive, follow these steps:

1. Before you start, be sure that the diskette you wish to copy is write protected. Write protecting a diskette will prevent you from accidentally erasing or overwriting any of its programs or files. You can write protect a diskette by placing a small piece of tape over the write protect notch on its left side.

2. Insert the DOS diskette into the disk drive, turn the computer and the monitor on, wait for the DOS to boot up, then enter the date and time. The last line on the screen will be A>.

3. Type Diskcopy, then press ENTER. The screen will display the message,

   ```
   Insert SOURCE Diskette in Drive A :
   Press any key when ready . . .
   ```

   The SOURCE diskette is the diskette you want to copy.  Remove the DOS diskette from the disk drive and insert the Source diskette. Press ENTER.

4. The screen will display a Copying . . . message, then the following instructions:

   ```
   Insert TARGET Diskette in Drive A :
   Press any key when ready . . .
   ```

   The TARGET diskette is the diskette you want to copy to.  Remove the source diskette from the disk drive and insert the Target diskette. (NOTE: It is not necessary to format a new diskette before using it as the target diskette. Diskcopy will format automatically before copying.) Press ENTER.

5. If your target diskette has not been formatted before, the screen will display a Formatting . . .  message before it copies. After it has formatted and copied, it will repeat the message it gave you in step 4:

   ```
   Insert SOURCE Diskette in Drive A :
   Press any key when ready . . .
   ```

   Remove the target diskette from the disk drive and insert the source diskette again. Press ENTER.

6. After another Copying . . . message, the screen will repeat the message from step 5:

   ```
   Insert TARGET Diskette in Drive A :
   ```

```
Press any key when ready . . .
```

Again, remove the source diskette from the disk drive and insert the target diskette. Press ENTER.

7. This is the last stage of the procedure. When the screen displays the message

```
Copy another diskette (Y/N)?
```

the procedure is over; the target diskette has been made into a duplicate of the source diskette.

8. If you want to make another copy of the source diskette, type in Y. The screen will repeat the message

```
Insert SOURCE Diskette in Drive A :
Press any key when ready . . .
```

You can repeat this procedure as many times as necessary and make as many copies of your original diskettes as you need.

### Diskcopy with Two Disk Drives

Copying on an IBM PC or IBM compatible Tandy with two disk drives is an even easier procedure, because it doesn't require alternately removing and inserting the source and target diskettes. Follow the directions for steps 1 and 2 for a computer with one disk drive, then type in Diskcopy A: B: at step 3 and press ENTER. The screen will display this message:

```
Insert SOURCE Diskette in Drive A :
Insert TARGET Diskette in Drive B :
Press any key when ready . . .
```

Remove the DOS diskette, insert the source and target diskettes into the proper disk drives and press any key on the typewriter keyboard. The screen will display a copying . . . message while it copies the source diskette and a formatting . . . message if the target diskette hasn't already been formatted. When the screen displays the message

```
Copy another diskette (Y/N)?
```

the procedure is over; the target diskette has been made into a duplicate of the source diskette. If you want to make another copy of the source diskette, type in Y and repeat the procedure.

## *Caring for Your Diskettes*

Your computer diskettes will provide years of dependable service if you and your students handle them properly by following a few simple procedures.

1. Never handle a diskette unnecessarily. When it is necessary to touch a diskette, hold it by the corner near the label, and touch as little of its surface as possible. Under no circumstances should you ever touch the interior magnetic recording surface, either through the center of the diskette or any other opening in the diskette cover.

2. Never bend or fold a diskette or allow pressure to compress it's edges.

3. Whenever possible, write out the diskette label before affixing it to the diskette. If it is necessary to write on the label after it has been affixed to the diskette, always use a felt tipped pen or marker. Never write on the diskette with a pencil or ball point pen.

4. Never attach anything to a diskette with a paper clip of any kind.

5. When a diskette is not in use, always return it to its paper envelope. Store it in a cool, safe place, away from direct sunlight, excessive heat, moisture, dust, and dirt of any kind.

6. Computer diskettes are magnetic, and any contact with other sources of magnetism can destroy the programs and files that are stored on them. Keep your diskettes away from magnets of any kind, no matter how harmless they seem to be. Magnetic desktop paper clip holders (a principal source of trouble because they aren't obvious), magnetic children's toys and so forth can damage your diskettes no matter how harmless they appear to be.
   In addition, many common electric and electronic appliances are sources of magnetism. Televisions, radios, electric lights, and even the screen of your computer monitor produce minute amounts of magnetism which can cause diskette damage. Store your diskettes away from these devices when they are not in use, and do not allow your diskettes to come into contact with them when you are using them.

7. Never attempt to clean a diskette with cloth or fluid.

8. Always write protect your important diskettes by covering the notch in the left side with tape. This will keep you from accidentally erasing or overwriting an existing program or file.

9. Finally, accidents that ruin or erase diskettes are bound to happen. Learn how to use the diskcopy and copy commands on your DOS, and, as a precaution, always make backup copies of any diskettes you would find difficult or impossible to replace.

## *For More Help . . .*

The Office of Technology maintains a Technical Assistance Center (TAC) in each of the five boroughs. These centers are equipped with a wide variety of computers, software, and, most important, experienced advisors to help you use the computers in your school more effectively and to answer any questions computer education you may have. All New York City Public School teachers are welcome to make use of TAC facilities, either by telephone or in person, at any time during the year. TACs are normally open from 9 A.M. to 5 P.M. during the school year and through all school vacations, including the summer, but daily hour scan vary. Call first.

Bronx TAC
1000 Teller Avenue
Bronx, N.Y. 10456
(212) 588-0279

Brooklyn TAC
3000 Avenue X
Brooklyn, N.Y. 11235
(718) 769-2860

Manhattan TAC
134 West 122 Street
New York, N.Y. 10027
(212) 662-0122

Queens TAC
167-01 Gothic Drive
Jamaica, N.Y. 11432
(718) 658-0491

Staten Island TAC
1200 Manor Road
Staten Island, N.Y. 10314
(718) 494-5042

## List of Software Used in This Text

This list contains all of the software mentioned in this text. The New York City Board of Education in no way recommends any piece of included software. It is the intent of this book to suggest different ways that software can be used to enhance the instructional process and not to recommend any specific software package. There are many graphics packages which are available which can perform the same functions as those named herein.

As with any classroom material, it is recommended that software be tested before it is used with students.

| | | |
|---|---|---|
| Apple Mechanic Typefaces | Beagle Bros. | * |
| Art Studio | Spectrum Holobyte | * |
| Auto Cad | Auto Desk, Inc. | 90-4740.02.1 |
| Blazing Paddles | Baudville | 93-0393.08.2 |
| Dazzle Draw | Broderbund | 92-2614.59.8 |
| Delta Drawing | Spinnaker | 71-1160.13.9 |
| Dr. Halo | Media Cybernetics | * |
| Fancy Fonts | Softcraft | * |
| Fontrix | Data Transforms | 90-3740.01.X |
| IBM Drawing Assistant | IBM PC Software | * |
| Micro-Illustrator | Koalaware | 71-1740.02.X |
| P.C. Design | Koalaware | * |
| P.C. Paintbrush | Z-Soft | * |
| Print Shop | Broderbund | 60-9740.06.7 |

* ISBN number not available